



**TRAIN
TOUGH!
KICK
ASS!**

A close-up photograph of a man's torso, showing his highly muscular abdomen and chest. He is wearing a blue tank top. Overlaid on the image is the text "GET JACKED!" in a large, bold, sans-serif font. "GET" is in white with a black outline, and "JACKED!" is in bright yellow with a black outline.

**GET
JACKED!**

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DISPLAY UNTIL JULY 27th

FEEL THE POWER OF PURE BEEF PROTEIN

Raptor-HP - an all new High-Performance "Super-Protein" designed to enhance physical performance, increase muscle growth and strength, and enhance recovery.

For centuries the number one protein source for athletes has been beef - red meat. Beef imparts almost mythical effects on building lean muscle tissue and muscle strength. However, the biggest negative with beef has always been the unwanted things that come along with it. Namely excessive calories, fat, and cholesterol. Even with all the baggage that conventional beef consumption brings, the world's most successful athletes still eat massive quantities of red meat day in and day out.

Raptor-HP Changes The Game.

New Raptor-HP gives you all the good and incredible muscle-building and strength generating qualities of red meat and none of the bad.

Raptor HP is Made From Pure Beef/Red Meat Protein.

Raptor-HP is a complete high-performance protein derived from all-natural beef raw material with no added hormones and is GMO free. No dairy, no soy - pure 100% premium beef protein.

The actual peptide component in Raptor-HP is greater than 97% protein. This is far higher than other proteins and yes more than whey isolate.

New and innovative protein technology have allowed us to isolate an ultra-high, extremely efficient (muscle-building) peptide profile from beef into a highly concentrated, high-performance "Super-Protein".

Raptor-HP is High-Pressure Hydrolyzed

Raptor-HP is hydrolyzed using an innovative chemical and enzyme free

High-Pressure Hydrolyzation (HPH) technique.

This is a new technique that allows precision molecular weight peptides to be cleaved from the intact protein giving the ability to engineer specific peptide weights within the protein composition.

Molecular weights of these peptides are measured in Daltons (Da). Raptor HP's molecular weight profile 15% - 6,000 Da, 55% - 3,000 Da, and 30% - 500 Da and smaller. The smaller the molecular weight of the peptide the faster it's absorbed into muscle tissue.

This gives Raptor-HP a Tri-Phase Peptide (TPP) for engineered absorption dynamics (EAD).

30% of the peptides are ultra-low molecular weight peptides and get absorbed extremely fast for immediate return to positive nitrogen balance and an immediate effect of protein synthesis for muscle repair right after training.

55% of the peptides have a 6X greater molecular weight for intermediate absorption dynamics. This supports the anabolic growth phase that occurs a couple of hours after training.

15% of the peptides have a 10X greater molecular weight and are slowly released for extended anabolic support and recovery several hours later.

Raptor-HP - 3 Dimensional Protein

Raptor-HP is a 3-Dimensional protein giving you fast, intermediate, and extended protein absorption rates.

Your muscles get a **rush of fast acting** protein right when you **drink Raptor-HP**. **Instant muscle repair after training.**

You then get an **intermediate** flood of peptides to your **muscles** as you enter the **anabolic growth** phase after your workout.

Raptor-HP is not finished yet - finally you get **extended** anabolic effects as slow released peptides enter your muscles for prolonged enhanced recovery and growth.

Raptor-HP is Enhanced with Creatine

Raptor-HP is also enhanced with creatine for the enormous research proven benefits creatine imparts. This creatine enhancement is synergistic with beef as red meat contains a high concentration of naturally occurring creatine. More so than any other food source.

Even with beef's naturally high creatine content, adding additional creatine brings each serving to the research proven dose quantities shown in clinical studies to build muscle and strength.

The Muscle-Building Power of Beef

Raptor HP gives

athletes the muscle-building power of red meat plus engineered peptide technology without any of the bad aspects of red meat.

Raptor-HP All The Good Without The Bad.

Tri-Phase absorption dynamics - fast, medium, and slow absorbing protein peptides.

Super low in fat. Virtually no cholesterol. Very low in calories.

Raptor-HP Tastes Like a Dessert.

Raptor tastes better than any other protein available. It's rich and creamy with absolutely no indications of beef whatsoever. You get the power of red meat, pure beef, with the taste of a dark chocolate gourmet milkshake.

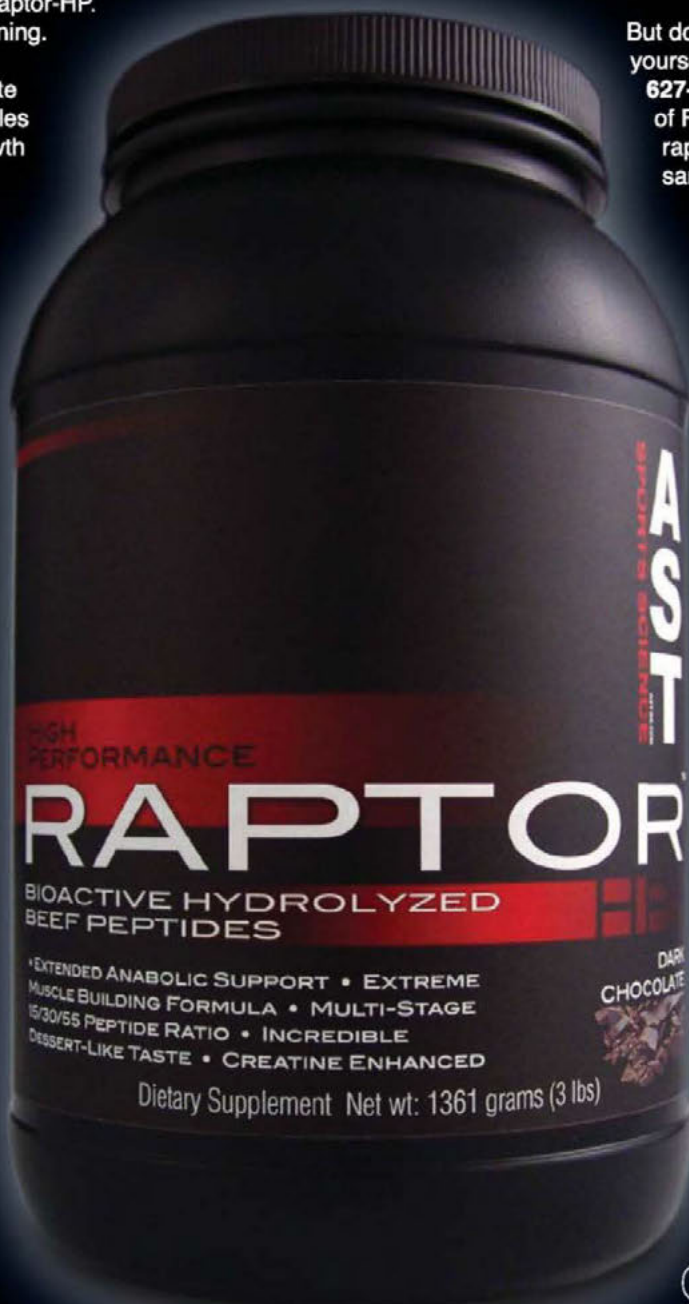
One scoop in 8 to 12 ounces of cold water or milk gives you a dessert-like shake with 24 grams of powerful, pure beef protein peptides.

The taste is incredible.

The texture and mouthfeel are creamy.

The muscle-building effects are fast and powerful.

But **don't take** my word for it. Try it for yourself absolutely free. Just call **1-800-627-2788** and ask for you free sample of Raptor-HP. Or go online to www.raptorhp.com and we'll get a free sample right out to you.



**Call For Your
FREE Sample!
1-800-627-2788**

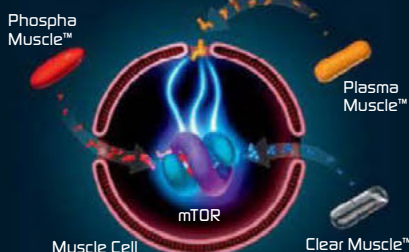
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THE SCIENCE OF
STRONG
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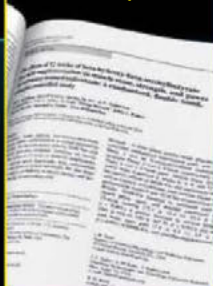
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HOW IT WORKS



The groundbreaking compounds in Clear Muscle™, Phospha Muscle™ and Plasma Muscle™ all work on separate musclebuilding mechanisms of the mTOR enzyme – the body's primary regulator of muscle growth – to activate protein synthesis and put your body into a prime anabolic state.

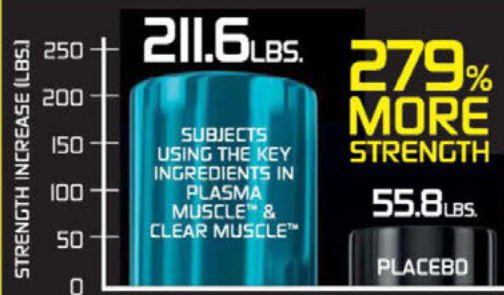
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STACK THEM FOR THE BEST MUSCLEBUILDING RESULTS!



In clinical research, test subjects gained 18.7 lbs. of pure lean muscle in just 12 weeks when combining a core ingredient in Plasma Muscle™ with the core ingredient in Clear Muscle™, while the placebo group gained only 4.6 lbs.



Test subjects in clinical university research who supplemented with a core ingredient in Plasma Muscle™ and Clear Muscle™ added 211.6 lbs. to their combined bench press, squat and deadlift total in just 12 weeks.

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MuscleTech® researchers have engineered the world's most powerful musclebuilding trilogy. Unlike most musclebuilders, the Musclebuilding Trilogy provides core ingredients that are backed by gold-standard, third party-validated, human clinical research from leading universities.

Clear Muscle™, Phospha Muscle™ and Plasma Muscle™ act on multiple musclebuilding pathways to trigger muscle growth, inhibit muscle breakdown, enhance strength and amplify muscle performance. It's the most complete, powerful, scientifically developed stack ever formulated.

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- Delivers extreme anabolic & anti-catabolic effects
- The only musclebuilding pills with Mediator® PA, BetaTOR®, Peak ATP® and optiNOs®
- Clinically dosed based on University of Tampa research
- Studies published in multiple peer-reviewed journals
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PHOSPHA MUSCLE™

Clinically dosed with Mediator® PA – the world's purest form of phosphatidic acid, which helped study subjects build 5.3 lbs. of lean muscle and boost 1-rep max leg press strength by 60% in 8 weeks.

CLEAR MUSCLE™

Delivers patented BetaTOR® – an exclusive metabolite and free-acid derivative of leucine and HMB, which was shown in university research to help study subjects pack on 16.3 lbs. of lean muscle in 12 weeks.

PLASMA MUSCLE™

Features an exclusive combination of patented Peak ATP® and optiNOs®, Peak ATP® helped study subjects gain 8.8 lbs. of lean muscle in 12 weeks while boosting strength by 147%, and the premium ingredients in optiNOs® helped subjects boost strength and crank out 4 times more reps than the control group.

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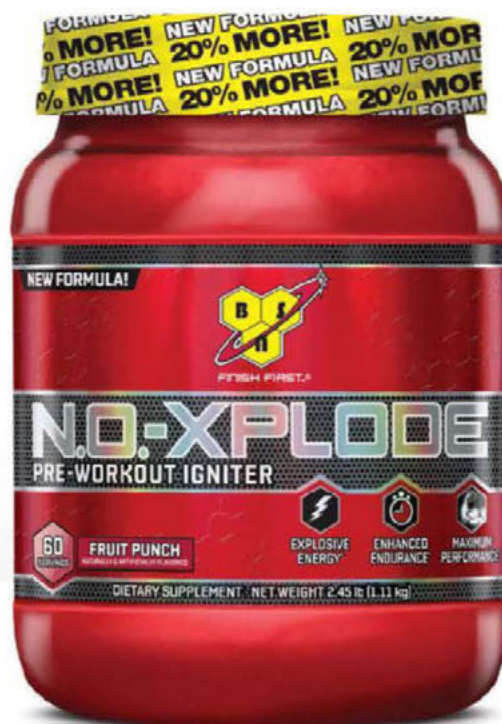
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PERFORMANCE



These statements have not been evaluated by the Food and Drug Administration. This product is not intended to diagnose, treat, cure or prevent any disease.

NOX-DM2 ©2015 BSN® For best results supplements should be taken as directed over time, at maximum dosage in conjunction with a healthy diet and regular exercise program. Results may vary.



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+PLUS SERIES CREATINE



THE NEW ERA OF
CREATINE,
NO BLOATING, 0 CARBS
AND NO LOADING PHASE

The Bio-available Creatine Matrix provides a blend of Creatines that maximize water solubility, improve athletic performance, minimize bloat/gastric distress and support muscular endurance. It features most notably Micronized Creapure®, the leader in quality for Creatine due to its purity, safety and clinical studies. In its micronized form it is also more water soluble than standard Creatine Monohydrate.¹

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THE RAPID ABSORBING,
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DEFENDING & GLUTAMINE
RECOVERY FORMULA.

A blend of different forms of Glutamine and Glutamine Peptide plus Vitamin C to promote recovery and immune system support. Stress on the body can also result in inadequate amounts of Alanine, which is also included. It is considered to be one of the most important of the amino acids along with Glutamine for actual amino acid metabolism. The formula also features Sustamine®: a unique dipeptide ingredient that combines the amino acids L-Alanine and L-Glutamine to help your body rehydrate, replenish and recover. Sustamine's® dipeptide structure is quickly and easily absorbed by the body.¹



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The Vitamin's Per of Gold for Nutrition and Wellness





GRAY MAYNARD
MMA FIGHTER - TEAM 4DN

Becoming the best athlete you can be is 10% physical and 100% mental. **THAT'S RIGHT; IT TAKES 110% EFFORT TO BECOME YOUR BEST. IF YOU DON'T HAVE ATTITUDE, YOUR MIND AND BODY AREN'T IN THE GAME.** 4DN **ATTITUDE** launches you into your workout with a blend of nutrients proven to **MAXIMIZE PERFORMANCE.** **ATTITUDE** includes but goes beyond the purest **CREATINE, CITRULLINE, AND BETA-ALANINE** essential to the best pre-workout supplements on the market. 4DN has enhanced the **NITRIC OXIDE** producing properties of this pre-workout by using Trimethylglycine Nitrate to deliver **700MG OF NITRATES.** **ELEVATP®** further boosts the availability of ATP to **FUEL MUSCLE CONTRACTION.** Additional augmentation of your pump and focus comes in the form of **CHOCAMINE, AGMATINE, AND PROANTHOCYANIDIN'S.** 4DN **ATTITUDE** is the most **COMPLETE PRE-WORKOUT SUPPLEMENT** on the market.

5g BCAAs	6g CITRULLINE MALATE	3g BETA ALANINE	3g CREATINE	2g BETAINES NITRATE (NOS-1™)	PER 2 SCOOPS
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"IT'S IMPOSSIBLE"

"DON'T GET YOUR HOPES UP"

"BE REALISTIC"

WATCH ME.

AMPLIFY STRENGTH • DELAY MUSCLE FATIGUE • INCREASE MUSCLE CELL VOLUME

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ORANGE



GRAPE



FRUIT PUNCH



NEW CLINICALLY TESTED T-BOMB 3XTREME

IT'S LIKE TESTOSTERONE ON TESTOSTERONE!

Pro-Testosterone Technology Alters Your Biochemistry For Explosive Gains In Muscle Mass!

The enormous proportions of shredded muscularity seen in the photos of today's top professional bodybuilders leave most of us staring in shock and envy. How do they achieve such mind-blowing massive physiques? How do they get their deep cuts, striations and vascularity?

If you think the answer is "testosterone," you're only partly right! Today's top pros know that in order to optimize the anabolic effects of testosterone, they must address many other extremely important hormonal functions...

Major pharmaceutical companies and universities have spent countless dollars in the fields of testosterone replacement and hormonal manipulation. Under the guidance of "in-the-know physicians" and widely acclaimed "gurus," pro bodybuilders have capitalized on this research to take their physiques to amazing proportions. However, those of you who don't have access to this underground network have been left in the dark on how to harness your anabolic potential. But now you have access to a powerful tool for hormonal manipulation thanks to MHP's new Clinical Strength T-BOMB 3xtreme!



"We were very impressed with the results of T-BOMB 3xtreme for supporting optimal hormonal balance during training. The athletes taking T-BOMB 3xtreme had more muscle mass and showed a significant 32% improvement in free bio-active testosterone over the control group, with no change in plasma estrogen levels. T-BOMB 3xtreme is a highly recommend supplement for serious athletes."

*— Jacob Wilson, Ph.D.
University of Tampa,
Human Performance Laboratory*



Bodybuilding's Legendary Testosterone Formula

Truth be told, you've been misled to believe that jacking up testosterone alone is the answer to building freaky muscle mass and improving sexual prowess. Instead, the key to achieving all your bodybuilding goals is through *hormonal manipulation*. This is what set MHP's revolutionary T-BOMB II apart from all other testosterone products and made it the legendary category leader. This powerful formula pioneered a new era of "True Hormonal Manipulation and Testosterone Enhancement" designed to help boost testosterone levels, while simultaneously working to limit testosterone conversion to estrogen, block estrogen receptors, help cripple SHBG to increase free testosterone levels and also lower conversion to DHT. This is why hundreds of thousands of men experienced tremendous results from T-BOMB II.

So, how do you make the best testosterone formula even better? You make it stronger!

New Clinically Tested T-BOMB 3xtreme Is 20% Stronger! The University of Tampa Human Performance Lab Put It to the Test

MHP scientists realized the only way to make a better product than T-BOMB II was to make this revolutionary formula even stronger. So they increased the potency of this already potent formula by 20%. To prove the efficacy of new T-BOMB 3xtreme, MHP turned over their powerful test boosting formula to a third party research team and told them to put the product through the most vigorous testing possible. Six weeks later, they had the answers they were looking for – scientific validation that T-BOMB 3xtreme works like no other pro-testosterone product. The groundbreaking research from the University of Tampa Human Performance Laboratory shows that Clinical Strength T-BOMB 3xtreme not only increases total testosterone, it significantly boosts bioactive FREE testosterone up to 32% in just six weeks without increasing estrogen levels!*

Here's how the research went down: Scientists at the University of Tampa gave T-BOMB 3xtreme to athletes and put them on a rigorous exercise program, training upwards of 10 times per week for six weeks. Interestingly, the workout conditions were so intense that the control group of athletes who did not take T-BOMB 3xtreme actually experienced a decrease in free testosterone and lost lean body mass. But the athletes who did take T-BOMB 3xtreme daily experienced elevated testosterone, increased free testosterone and a significantly improved testosterone-to-estrogen ratio!

Clinical Strength T-BOMB 3xtreme uses potent doses of powerful herbal extracts, an advanced 5-step hormone optimizing technology and a 2nd Messenger Complex to help increase testosterone levels. At the same time, its advanced 5-step formulation inhibits the conversion of testosterone to estrogen, blocks

estrogen receptors and reduces the production of DHT – which all add up to enhanced anabolic muscle building and improved male performance.

Because of its highly advanced formulation and powerful ability to promote extreme muscular growth, T-BOMB 3xtreme is the test booster of choice for top pro athletes such as Victor Martinez, Brian Shaw, Marco Rivera, Jon Andersen and Joe Mazza. These elite bodybuilders, strongmen and powerlifters turn to T-BOMB 3xtreme to experience the following benefits:

- Increased Muscle Mass and Strength
- Increased Protein Synthesis
- Increased Muscle Glycogen Synthesis
- Increased Sex Drive and Performance

Mimic the Stacks Used by the Pros. T-BOMB 3xtreme's Advanced Optimone-5™ Equals Total Hormonal Manipulation

Clinical Strength T-BOMB 3xtreme's legendary formula and Optimone-5 technology are now 20% stronger than ever! This means T-BOMB 3xtreme provides clinically validated benefits that no other product can provide:

1.) Increases Your Natural Production of Testosterone*

Clinical doses of the most proven testosterone-boosting compounds help force your pituitary into overdrive! Clinical Strength T-BOMB 3xtreme stimulates your pituitary to produce luteinizing hormone and triggers the release of testosterone, helping to promote explosive strength and head-turning gains in rock-hard muscle mass! T-BOMB 3xtreme's incredible testosterone-boosting effects were clinically shown in the University of Tampa research and blow away other test formulas on the market!† (See Diagram #1)

2.) Increases "Free Testosterone" by Up To 32% and Cripples SHBG*

Elevated testosterone is only beneficial if it is circulating in the blood as "free testosterone." Sex-hormone-binding globulin (SHBG) is a protein that binds to testosterone, rendering it useless. T-BOMB 3xtreme doesn't just lower SHBG, it helps annihilate it! T-BOMB 3xtreme frees up more testosterone for even greater gains in mass and strength.

The University of Tampa study verified a 32% increase in free testosterone without increased estrogen.* Increased sex drive is another positive "side effect" you will experience. (See Diagram #1)

3.) Helps Stop Testosterone to Estrogen Conversion

Unfortunately, not all testosterone remains as testosterone once it's produced. The "aromatase" enzyme converts some of your testosterone into the female hormone estrogen, which is responsible for the accumulation of body fat, water retention, "bitch tits" and poor sexual performance. Anti-aromatase inhibitors found in T-BOMB 3xtreme eliminate the conversion of testosterone to estrogen. This tremendous triumph for MHP R&D formulators solves a very serious problem for bodybuilders everywhere. (See Diagram #2, Figure A)

4.) Blocks Estrogen Receptors

Stage 2 of T-BOMB 3xtreme's "estrogen assault" uses estrogen-blocking compounds to clog the receptors, ensuring that estrogen does not attach to the receptor and exert any of its estrogenic effects. With T-BOMB 3xtreme's two-stage assault, testosterone – and only

testosterone – dominates your hormonal composition. (See Diagram #2, Figure B)

5.) Lowers the Conversion of Testosterone to DHT
Testosterone can also convert into a hormone known as DHT, which is responsible for negative side effects such as poor hair and follicle quality and non-cystic acne. Clinical Strength T-BOMB 3xtreme provides your body with the critical nutrients to minimize and block this conversion. Additionally, minimizing DHT, which normally competes with testosterone for the androgen receptor, leaves even more receptors open for testosterone to latch onto.

EXCLUSIVE Second Messenger Technology: The Testosterone Amplifier!

Regardless of how much testosterone you have pumping through your body, you aren't going to benefit if your receptors aren't responding. If your muscle cells aren't ready to accept all of this extra "T," your testosterone-maximizing efforts are being wasted!

Here's how it works: When testosterone arrives and docks at the muscle cell receptor site, complex intracellular compounds called "2nd Messengers" communicate this arrival to the cell nucleus and trigger an anabolic (muscle building) reaction. The more efficient your 2nd Messengers are working, the louder the signal they send. This is referred to as signal transduction, and the amplified signal increases testosterone's anabolic effects to stimulate muscle growth. Simply stated, if your 2nd Messengers are operating optimally, the muscle building effects of testosterone are increased exponentially!

Clinical Strength T-BOMB 3xtreme brings this amazing, new receptor site technology to you with its proprietary 2nd Messenger Complex. Exclusive to T-BOMB 3xtreme, this complex has upped the ante on testosterone's role in bodybuilding... forever! (See Diagram #3)

T-BOMB 3xtreme: It's Like Testosterone on Testosterone!

Clinical Strength T-BOMB 3xtreme's Optimone-5 Complex will make sure your hormonal landscape is primed for growth. Let's go through our checklist:

- Your pituitary is in overdrive, cranking out testosterone.
- You're crippling SHBG, allowing even more "free testosterone" to be available to latch onto the muscle receptors.
- You're shutting down estrogen with a two-stage assault by halting the conversion of testosterone to estrogen and by blocking the estrogen receptor so estrogen cannot be utilized.
- Then comes the Grand Finale – The 2nd Messenger Complex sends an amplified signal that testosterone has arrived and helps unleash its anabolic effects.

MHP is so sure that you will be amazed by the mind-blowing gains in rock-hard muscle and strength, that they are offering a 100% money back guarantee if you're not satisfied with T-BOMB 3xtreme – NO QUESTIONS ASKED!††

THE LEGEND CONTINUES WITH T-BOMB 3XTREME!

DIAGRAM 1

INCREASED FREE TESTOSTERONE*

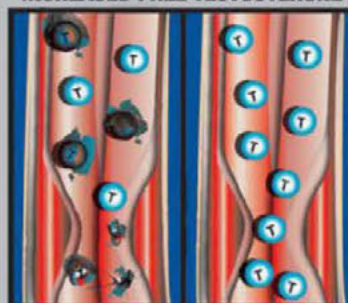


Figure A

Figure B

Figure A illustrates what happens to 98% of your testosterone when it reaches the bloodstream. SHBG (sex hormone-binding globulin) attacks your testosterone and kills it.

Figure B illustrates T-BOMB 3xtreme's powerful ability to keep your testosterone "FREE" by preventing SHBG (sex hormone-binding globulin) from attaching to it. T-BOMB 3xtreme helps maximize the amount of "free testosterone" that your body can use to help trigger an anabolic (muscle building) reaction.*

DIAGRAM 2

TWO-STAGE ESTROGEN BLOCKER

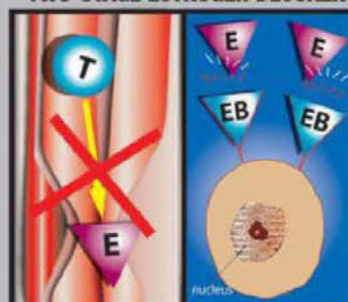


Figure A

Figure B

Figure A. T-BOMB 3xtreme helps block the conversion of testosterone to the female hormone estrogen by providing your body with the critical nutrients necessary to hinder this conversion.

Figure B. T-BOMB 3xtreme contains compounds that fill up and block the estrogen receptors in your body. By doing so, the blocked estrogen cannot be absorbed.

DIAGRAM 3

2ND MESSENGER AMPLIFIER

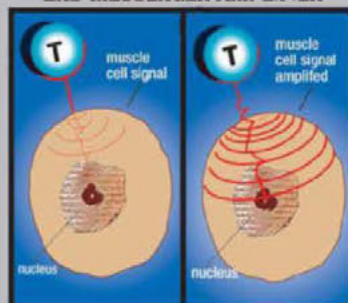


Figure A

Figure B

Figure A illustrates what typically happens when testosterone reaches your muscle cell receptors. A weak signal and reaction minimizes testosterone's effects.

Figure B. T-BOMB 3xtreme's exclusive 2nd Messenger complex takes testosterone to the next level by magnifying the testosterone signal in your muscle cells. This powerful signal forces an unprecedented anabolic (muscle building) reaction.

T = Testosterone E = Estrogen EB = Estrogen Blocker

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MHP
MAXIMUM HUMAN PERFORMANCE



EDITOR'S LETTER

BY STEVE BLECHMAN, Publisher and Editor-in-Chief

ONE OF A KIND: JOSE'S TIME

Jose Raymond is an amazing bodybuilder in many ways. The man known as "The Boston Mass" has built one of the best physiques in bodybuilding today, winning this year's Arnold Classic 212. Equally significant is how Jose has triumphed outside the gym, overcoming circumstances that would have broken lesser men. Jose tells his story for the first time in this month's MD, and I was blown away by it. One cannot come away from reading his story without being a huge fan of Jose Raymond, the man, in addition to Jose the bodybuilder. Jose deserves to be on this month's cover of MD for reasons that go beyond bodybuilding. He commands respect on many levels. Jose's time has come— and I hope this month's cover motivates him even more to take his thick yet shredded physique all the way to the top, and win the 212 Olympia.

Jose's story unfolds in "Building the Boston Mass: From Hellish Childhood to a Helluva Bodybuilder," on page 92. Jose tells MD's Peter McGough how he survived a nightmare upbringing, made the big decision at age 34 to join the BIG boys, and with his 2015 Arnold 212 victory, carved himself out as number-one contender for Flex Lewis' title.

Why do pro bodybuilders look the way they do? Genetics are a big factor, and pharmaceutical assistance can help, but beyond DNA and drugs, the pros are very different in how they approach training. Find out some of their pro-bro techniques in "Get Jacked! 10 Training Secrets of the Pros" on page 100.

Victor Martinez has long been a favorite among fans, winning both

the Arnold Classic and Arnold Europe, and having been one of the most controversial Mr. Olympia runners-up in the history of that event. In "8 Lifts That Made Victor Great! Exercises That Built the Dominican Dominator" on page 110, he talks about the most effective exercises that contributed to the physique that has won six pro shows and counting.

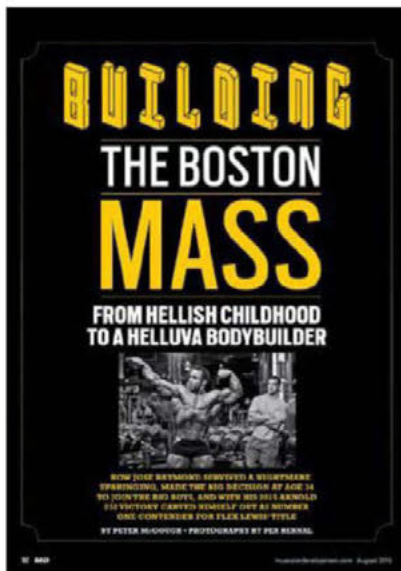
Alexis Rivera Rolón, the very first NPC Nationals Overall Champion from outside the 50 states of the USA, has a few standout body parts— and his thick chest is definitely one of them. Rolón talks chest training in "What a Freakin' Chest! Pec Smashing With Alexis Rivera Rolón, 2014 NPC National Champion" on page 120.

In an industry crowded with failed marriages and one-dimensional achievers, the story of Branch and Trish Warren is a reminder that balance is obtainable. Find out how they manage the responsibilities of family, bodybuilding and their business in "WARREN PEACE: A Love Story" on page 130.

Muscular Development is your number-one source for building muscle, and for the latest research and best science to enable you to train smart and effectively. Our team of physicians, industry experts and research scientists has these reports on improving performance this month:

- "Protein Power for Fat Loss: Quality, Quantity and Regulation of Food Intake and Metabolism" – Fat Attack, page 72
- "BCAA Supplements: Facts and Fiction – Setting The Record Straight! A Scientific Report" –

JOSE DESERVES TO BE ON THIS MONTH'S COVER OF MD FOR REASONS THAT GO BEYOND BODYBUILDING. HE COMMANDS RESPECT ON MANY LEVELS.



Nutrition Performance, page 78

- “Leucine: #1 Muscle Growth Activator” – Supplement Performance, page 82
- “Better Than Clenbuterol: Formoterol?” – Muscle Growth Update, page 86
- “Is There a Best Order of Exercise?” – The M.A.X. Muscle Plan, page 88
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See you next month!

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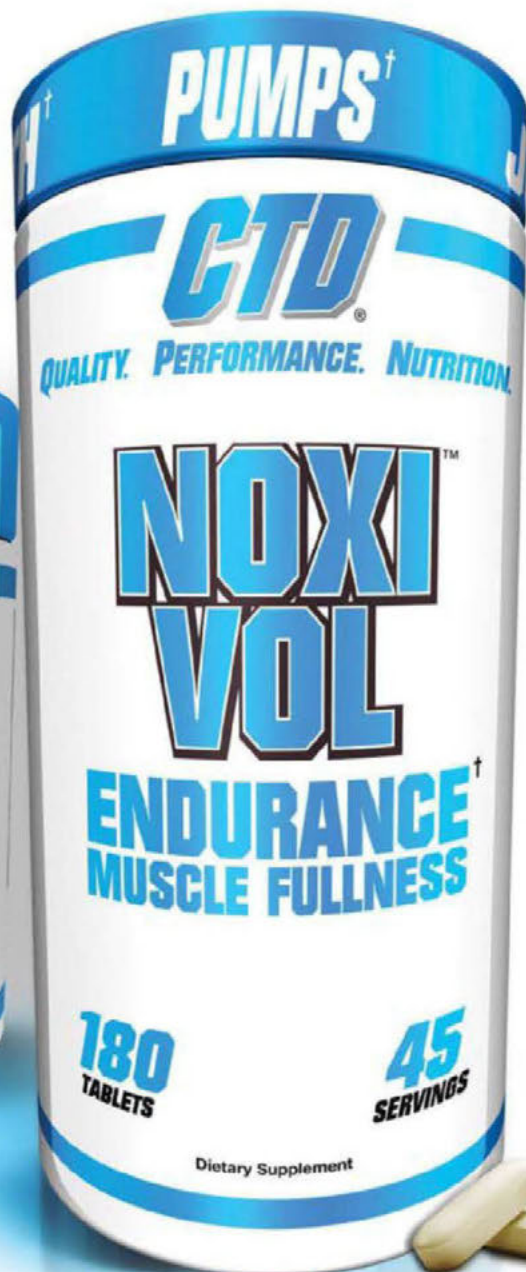
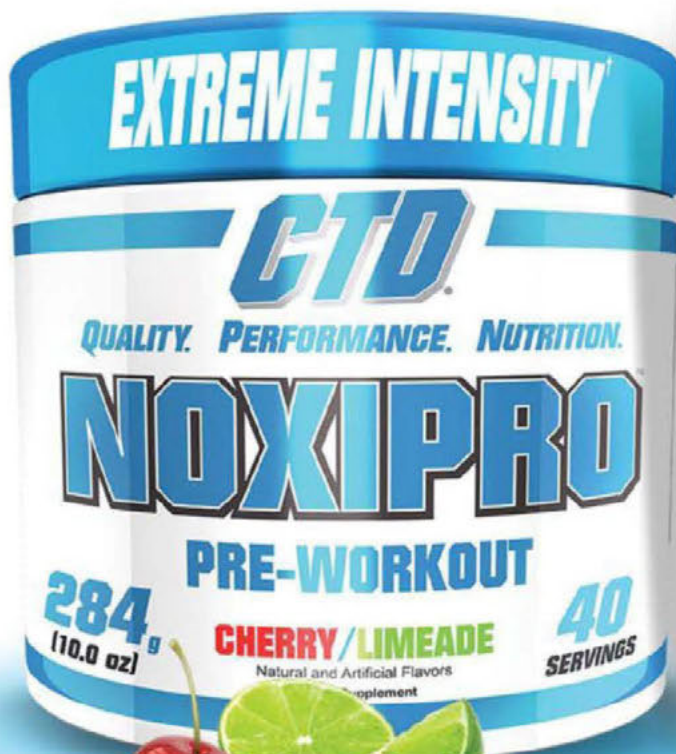


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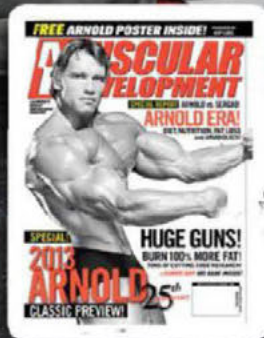
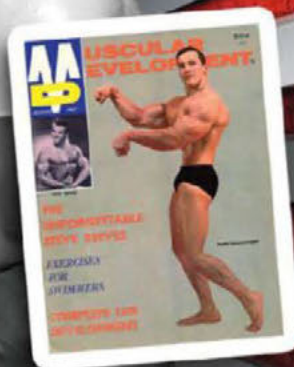
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BY PETER McGOUGH

SEE
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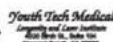
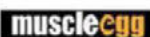
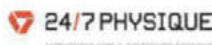


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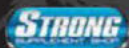


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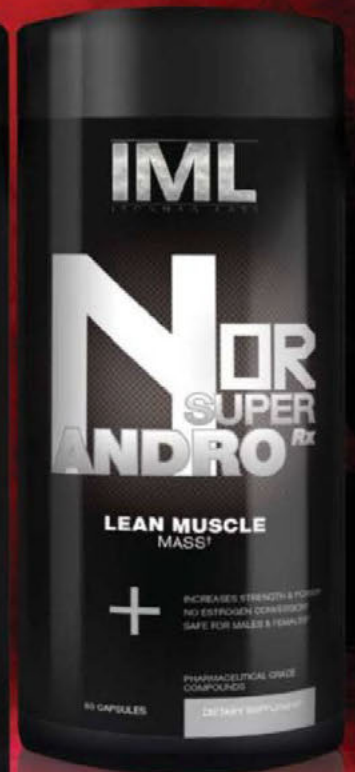
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HOW I SEE IT!

WITH **SHAWN RAY, DORIAN YATES AND KEVIN LEVRONE**

Muscular Development is proud to bring you "How I See It," featuring three IFBB Hall of Fame bodybuilders, and legends of the industry that we are honored to have on Team MD. Between Shawn Ray and Kevin Levrone, they have a total of six runner-up finishes at the Mr. Olympia, and Dorian Yates won the Mr. Olympia title six consecutive times.

BODYBUILDING'S SOCIAL MEDIA SENSATIONS

Are Facebook 'Likes' and Twitter Followers More Important Than Competing?

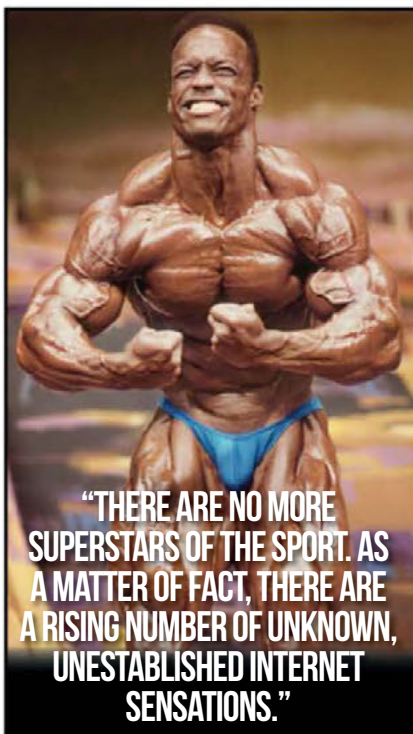
SOCIAL MEDIA LIKE INSTAGRAM, FACEBOOK, YOUTUBE AND TWITTER HAS DEFINITELY CHANGED THE LANDSCAPE OF THE BODYBUILDING WORLD. YOU NOW HAVE MEN AND WOMEN WHO DON'T COMPETE, YET HAVE BEEN ABLE TO LAND SPONSORSHIPS AND GENERATE BOTH SIGNIFICANT INCOME AND FAN FOLLOWINGS THANKS TO THIS NEW ONLINE CATEGORY. HAS COMPETITIVE BODYBUILDING LOST A LARGE PART OF ITS FORMER RELEVANCE AND PRESTIGE, NOW THAT IT'S NO LONGER NEEDED AS A PATH TO SUCCESS?

SHAWN RAY

Social media has provided far greater opportunities to maximize an athlete's fan base, visibility and self-promotion, compared to years past and during my competitive era. Athletes today can get very involved in their own marketing, which can lead to millions of fans and followers, whereby the athlete can creatively find ways to monetize those followers and secure advertisers for their social media posts for products, clothing, equipment and so forth. Is this a plus or a minus with respect to our industry? I believe it's both.

Back in the day, fans had to wait anxiously to read the magazines to see what the pro athletes were up to, how they trained or dieted for competition, and to read the monthly columns to gain insight to who we were as superstars of the sport. Fans no longer have to wait to read what's happening in the lives of the sport's industry leaders. They can simply follow them on Twitter, Facebook or Instagram for immediate updates. The athletes can post instant photos of themselves in the gym training for competition, demonstrating their new philosophies and diet regimens— and use Skype for personal fan interaction, for a fee. Athletes can now take control of their own marketing and image where no real writing skills are involved, but rather abbreviated text and lots of photos and video.

On the plus side of things, I like the fact that an athlete,



whether or not he chooses to compete, has the option or ability to control his own fate in this industry. Athletes can take their own photos and create images that are more reflective of who they actually are— without all the gloss and Photoshopping some high-priced photographers use to create unworldly photos that ordinary people cannot possibly accept as being real.

The other benefit of athletes using social media is getting quick and precise updates from the athlete him or herself, as opposed to magazines that can spin truths and omit facts, depending on the interpretation of the journalist. Now athletes write what they say and feel, without being controlled by a third-party perception of who they are as people— or how the magazine wants to present their persona or image to the world.

On the negative side, there are no more superstars of the sport. As a matter of fact, there are a rising number of unknown, unestablished Internet sensations that are more widely noticeable than our reigning Mr. Olympia champion! Some of these new jacks have mil-

lions of followers hanging on their very posts daily. When these individuals are seated next to our sport's leading men, they overshadow and overwhelm champion athletes who would have been considered megastars in the '90s, and are now simply reduced to being "the guy" sitting next to the guy with 4 million fans from social media. Yet the pro athlete has no clue who they are, and how these individuals became more famous than they are!

Social media and the digital age have changed the game. Every athlete in this industry hoping to survive and thrive had best get educated on how to optimally use social media— or soon, the pros who are in actuality the most notable will become the ones that nobody knows.

Twitter: @sugarshawrray

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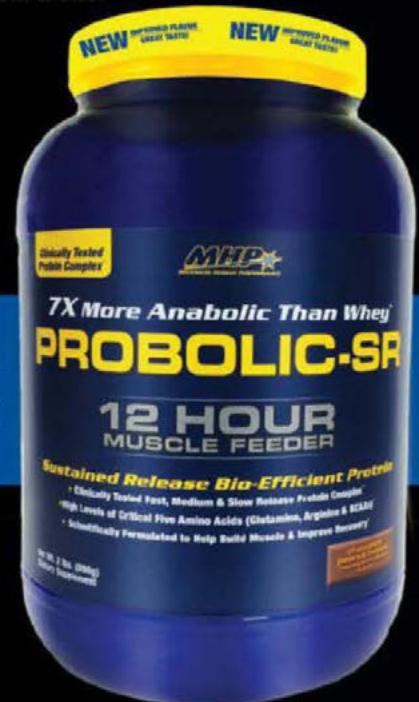
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WITH SHAWN RAY, DORIAN YATES AND KEVIN LEVRONE

DORIAN YATES

Social media can be a path to success today in the bodybuilding industry—there is no doubt about it. People don't feel it's absolutely necessary to enter and win contests anymore to be known and build a fan base. In the old days, that's what you had to do, or else nobody would ever find out about you. Being featured in the magazines was your only real avenue for publicity. Now anybody can promote himself by posting his or her photos and videos online for the whole world to see instantly. Some have built followings numbering into the millions this way, without ever having won a major title or achieving anything, really. There are some fit girls I have seen who have twice as many followers online and on social media that I do, and I won the Mr. Olympia six times! And I'm not looking down on them for it. The level of competition has become very high, and a great deal of sacrifice and a certain level of risk is perceived to be required now to win big titles. So if these people choose to just look great in carefully chosen and filtered photos and videos and their fans find them inspiring, what's wrong with that?

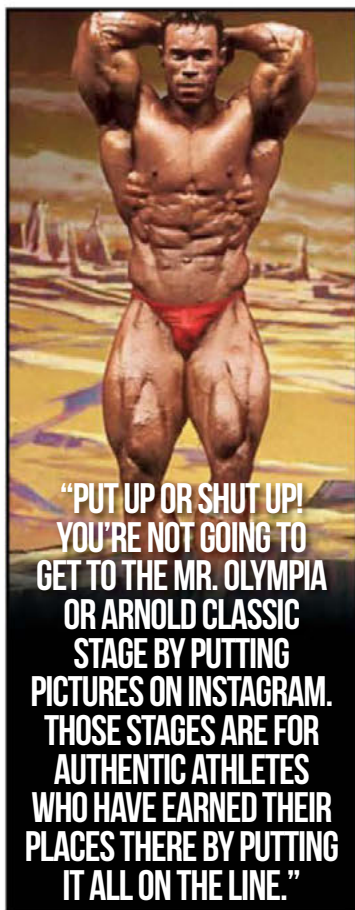
In my career, I was known for lying low between contests and focusing on my own training and the improvements I wanted to make. They called me "The Shadow" because I was this mysterious guy

off in his dark dungeon gym in England, emerging only to win the Mr. Olympia once a year. Given that, I have been asked a couple of times if I would have taken advantage of social media back then or ignored it. That's tough to say, but I think it would have been foolish not to utilize it to some extent, just as any bodybuilder today who doesn't have an online presence is missing out on massive—and free—promotional opportunities. Maybe I would have posted those famous black and white photos of me from 1993 that Kevin Horton took for *Flex* magazine. The only thing I can say for certain is that I would not have taken any photos or videos to post whilst I was training. That would have been a distraction. And I would not have posted progress pictures as I prepared for the shows, as I didn't need outside feedback or encouragement. I was in the game to be Mr. Olympia, not to entertain people or build a following. The competitions were my platform to show what I had done, and the judges were the only ones I needed approval from. But if others today choose not to compete, and their "stage" is Facebook, Instagram and Twitter, I have no problem with that. To each his own. For those who want to succeed in the actual sport of bodybuilding, competing in and winning contests is still very relevant.

Facebook: Dorian Yates



"ANYBODY CAN PROMOTE HIMSELF BY POSTING HIS OR HER PHOTOS AND VIDEOS ONLINE FOR THE WHOLE WORLD TO SEE INSTANTLY. SOME HAVE BUILT FOLLOWINGS NUMBERING INTO THE MILLIONS THIS WAY, WITHOUT EVER HAVING WON A MAJOR TITLE OR ACHIEVING ANYTHING, REALLY."



KEVIN LEVRONE

The whole Instagram fitness celebrity thing is a joke to me. Some guy can have nice abs and he posts pictures of them. He might have no training or nutritional certifications or any real knowledge, he's never competed, yet he can have 200-400,000 followers and advertise he's available for "meal plans" and coaching services. People get brainwashed and duped by these selfies taken from the best angles, in the best lighting, and then processed and filtered all to hell. It's a way to manipulate people and market an ideal image that isn't even real. Fame in itself means nothing. Anyone can post up pictures of nice abs or big arms and get followers. Sex sells even better, so women who are willing to post nearly naked pictures of themselves on IG and Facebook can get more followers than IFBB Hall of Fame bodybuilders. If it weren't for some top guys like Phil Heath and Kai Greene putting themselves out there on social media, I'm afraid we might be in danger of losing our sport to these "social media" bodybuilders and fitness models.

You know what I say? Put up or shut up! You're not going to get to the Mr. Olympia or Arnold Classic stage by putting pictures on Instagram. Those stages are for authentic athletes who have earned their places there by putting it all on the line in competitions, all the way from the local level on up the ladder. Our sport has been going strong now for over 60 years. How long will this social media trend last? Competitive bodybuilding is still the root of all this. Without it, there would be no one getting famous based on one body part on social media. These people are still trying to look like competi-

tors. I thank God for Steve Blechman and the others who have the vision to carry our sport into this new age of technology without getting lost.

I need to say that I am not hating on these social media bodybuilders and fitness models. They train and they look good, so by all means they should be able to post up their pictures and get some recognition. But they don't have the battle scars, the wounds or the track record that real bodybuilding stars have. They can't put themselves on that same level. Just because I can go shoot a gun doesn't make me a Green Beret.

I would tell everyone to be wary of the self-proclaimed experts on social media who have no actual credentials or track records before you take their advice, and certainly before you enlist their services to help you reach your goals. The number of followers people have doesn't give them any credibility to dispense advice on training, nutrition or drugs. In some cases, many of their followers are fake or bought anyway. I am very grateful that I have fans, actual fans who have supported me in some cases for well over 20 years now. They don't follow me just because some crazy filtered pictures of mine caught their eye while they were bored on their iPhones. They have been with me through all my ups and downs, and they're not going away. Neither am I. As for these social media bodybuilders, I can't say the same.

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FAUX REAL?



WHERE'S BOB?

AUGUST 8TH

TAMPA PRO

AUGUST 15TH

NPC TEXAS STATE

AUGUST 29TH

EUROPA GAMES—
ATLANTIC CITY, NJ

We've all heard the saying, "Fake it till you make it." Seems the recent trend in the bodybuilding world is to take that literally, and then continue to ride the train until the wheels fall off. What disturbs me most about this is that it's done shamelessly, and with some degree of ACTUALLY believing it.

There was a time, years ago, when the general public felt as though taking steroids made the muscle "fake," or that the strength that came along with it was somehow negated. For some, this notion continues to this day—but generally people are more educated, and realize that muscles or strength doesn't come from a bottle. While certainly PEDs help, they pretty much do nothing on their own.

Enter the present day. Generation Selfie ... Generation Look at ME! The Internet has made it possible to become a superstar in the sport of bodybuilding, despite never stepping onstage, never win-

ning a title or never becoming a professional.

Steroids are now passé, replaced by injecting whatever is convenient. Synthol was the oil of choice years ago ... now PMMA and other assorted salad oils have been discovered. Hell ... why even train anymore? TRUE muscles from a bottle! More disturbing than the idiots who use this as a platform to make themselves popular is the equal amount of idiots who believe it's real. REALLY? Have people become that dumbed down that they can't tell the difference between real and fake? Possibly. In all reality, what can you trust anymore? Generation Gullible has grown up with the Internet being their number one source of information. Pictures are Photoshopped, stories are made up ... can you really blame them for their naivety?

I see long lines of "fans" waiting to meet their fake heroes. If you were to poll the people standing in line (and you know how painful that can

be) and asked them whom they were in line to see and what they were famous for, I'm quite sure the response would be hilarious.

"Who are you in line to see?"

Joe Fan: "It's Jim Nasium!"

"Cool, who is he?"

Joe Fan: "He's a really big guy I see on YouTube. He lifts really heavy weight and swears a lot."

"Oh ... what has he won?"

Joe Fan: "Nothing that I know of."

"Is he a trainer?"

Joe Fan: "No."

"So why do you want to get a picture with him?"

Joe Fan: "Because all these other people want one."

The King truly has new clothes.

This new phenomenon isn't just relegated to the guys, mind you. There are certainly more girls faking the funk online than ever. It's not uncommon to see a pretty girl with 2 million Facebook likes, with Twitter and Instagram on full blast. Of course, even that's questionable—as it's quite easy to BUY "likes," and appear to the world that you have lots and lots of people who care about what you're doing on an hourly basis.

Here's the reality ... you

can live in fantasyland on the Internet, but when it comes to actually appearing in person, I've found that more often than not, the end does not justify the means. You can make your waist 20 inches and your boobs and butt stick out like someone is squeezing you in the middle, but be prepared ... what you're expecting to see and what you might REALLY see are two different worlds. No Photoshop App for personal appearances.

Fake muscles, fake strength, fake plates, fake accounts, fake number of "friends" and a fake personality. Pictures of fake watches, fake cars and fake houses. Videos of fake workouts complete with fake intensity, and a gratuitous babe or two thrown in there (who will also be squatting with 405 on the bar ... for REPS!)

I don't blame the fake people for being fake ... it's all they've got. I blame the followers for supporting their facade, for adding to it and buying into the hype generated on a daily basis. You want to be a fan of The Avengers movies ... great! It's a MOVIE. We all know it's not real, but it's entertaining and fun, and the actors know they're playing a part ... a role.

To the "fans" of these people: "They have eyes, but they do not see." ■

The Internet has made it possible to become a superstar in the sport of bodybuilding, despite never stepping onstage, never winning a title or never becoming a professional.

Bob Cicherillo is the IFBB Athlete Representative and one of bodybuilding's best-known personalities. He is an IFBB pro who placed first and overall as a super heavyweight in the USA Championships and first in the Masters Pro World. Bob is host of over 20 bodybuilding shows throughout the season, including the Mr. Olympia tips and first

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THE VOICE

FEATURING **DAN SOLOMON**



CAMPING WITH FLEX

Palm trees, exotic cars, manicured golf courses—just a few of the things you'll find in Boca Raton, one of southern Florida's affluent east coast destinations. Known for its population of retirees, a new resident recently moved into the neighborhood, and he brought with him a set of wheels even more impressive than those driven by many of the well-to-do locals. His name is Flex Lewis. His wheels, built to crush his competition, have helped him become one of the bodybuilding world's elite.

Nearly a decade ago, in his early 20s, he journeyed to the United States from his native Wales to pursue dreams of bodybuilding fame. He landed in Florida after a few stops, one in Nevada and another in Tennessee, eventually establishing himself as the world's top bodybuilder under 212 pounds. Flex learned quickly that building his brand is perhaps as important as building his physique. With some help from his fiancée, IFBB Bikini Pro Ali Rosen, along with industry marketing guru Joe Volgey, he launched an ambitious plan that included his Flextraordinary clothing line along with a series of Project Flex training camps, open to bodybuilders of all levels. The reigning Olympia 212 champion secured a 10,000-square-foot warehouse location, opened his checkbook and packed the place with high-end training equipment—the kind that builds world-class physiques. Earlier this year, men and women traveled to Boca Raton for the inaugural Project Flex weekend. Some were there to learn, others were there for inspiration, and several just wanted a chance to meet the man who has amassed one of the sport's biggest fan bases.

I visited the camp during its second day. Even more impressive than the facility itself was the genuine connection Flex had with all who attended. He spent time getting to know everyone. He asked questions and told stories. Flex is among the rarest of champions, managing to keep both

feet on the ground, inspiring through humility and motivating through authenticity. Volgey, Flex's brand manager, explains, "Flex is different than any other athlete I have ever worked with. Not only does he bring it onstage, but he also backs it up offstage. Fans who get the chance to meet him are quick to recognize his humble nature. He is very grateful for the opportunity he has been blessed with, and always attributes his success to his fans that drive him to be at his best at all times."

As I stood in the training facility, surrounded by larger-than-life images of Flex, high-energy music and a full inventory of his clothing line, it was obvious that this place was far more than just a location to host camps. The facility, perhaps symbolically, was Flex's way of claiming a slice of the American dream, his flag firmly planted in the land.

Diego Gonzalez, one of the campers who traveled from outside the United States, shared his thoughts on the weekend. "Project Flex was an amazing experience that I will remember forever. I had to travel from Mexico for it, but it was worth it. I couldn't be more motivated to take my bodybuilding journey to the next level."

At various points, Flex grabbed the microphone for some storytelling. In that familiar accent, bodybuilding's favorite Welshman told tales of his legendary training sessions with renowned trainer Neil Hill. He even shared the curious revelation that he was given the nickname Flex long before he was a bodybuilder. Yep, that's a true story ... and if you'd like to hear him tell it, just find your way to Boca Raton. But consider yourself warned—you may never want to leave.

Visit Flextraordinary.com for more info on Flex's upcoming camp dates. ■



Dan Solomon is the Senior Features Editor at Muscular Development. For nearly 15 years, Dan has conducted many of the most prominent bodybuilding interviews of all time, including memorable visits with Arnold Schwarzenegger, Joe Weider and other icons of the sport. Creator of the popular "PBW Radio" program, Dan has served as moderator of the Olympia Press Conference and lead commentator at many of the world's biggest bodybuilding events. Follow Dan on Twitter @DanSolomon100 and tune in to PBW at www.MuscularDevelopment.com/pbw.



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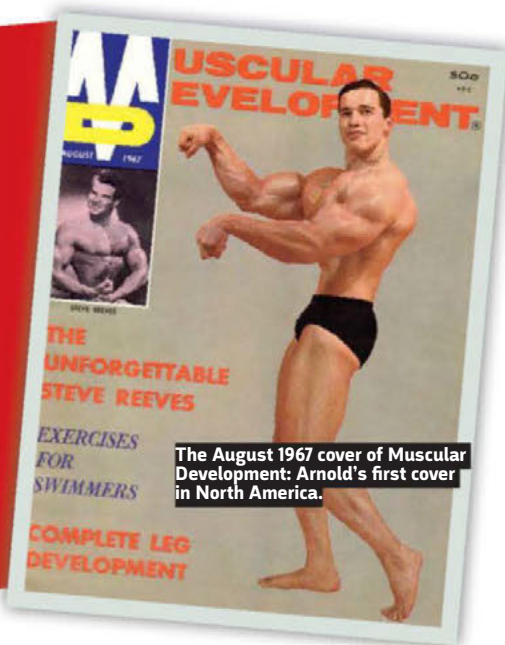
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WITH **PETER MCGOUGH**

THE ARNOLD AND MD CONNECTION 48 YEARS STRONG



The August 1967 cover of Muscular Development: Arnold's first cover in North America.

With this being the August issue, it's timely to recall that exactly 48 years ago, Arnold Schwarzenegger graced the August 1967 cover of MD. Thus, MD became the first North American magazine to put the future Mr. Olympia, Hollywood superstar and governor of California, front and center.

In those 48 years, he's made the cover of MD another 11 times and obliged

with countless interviews. In fact, many in the MD stable have interacted with him. Both Shawn Ray and Dan Solomon have recently interviewed him, and our Bob Cicherillo has for the past few years been the moderator (not that Bob does anything in moderation) at the annual two-hour Arnold seminar held in Columbus, the morning after the Arnold Classic. Yours truly has done numerous inter-

views with bodybuilding's number-one son over the past 20 years, so you see the MD crowd is used to rubbing delts with the guy.

And of our boss and driving force, Steve Blechman, Arnold has gone on record as saying, "One of the guys that (receives) a lot of credit is Steve Blechman from Muscular Development. Those guys have done an extraordinary job for years and years and years to promote health, to promote strength, to promote bodybuilding, powerlifting, weightlifting and all those kinds of things."

An indication of the Arnold/MD connection came at this year's Arnold Sports Festival last March. Twenty-four hours before the Arnold Classic, ace videographer Jordan Blechman and I waited with about six other film crews to interview the contest's namesake. Arnold was running late, and the interview co-coordinator told me the focus of our

attention only had time to do two interviews and MD would not be one of them. I said I'd wait. Arnold duly arrived, and in tandem with co-promoter Jim Lorimer decided the two interviews would be with the WWE crew and MD. And so we got the interview.

Personally, over the 20 years of working with the seven-time Mr. Olympia, two occasions stand out. The first took place in February 2005 in Sacramento, when I was invited to spend a day with him as he went about the business of being the governor of what he calls "the greatest state in the nation."

I went to most of his meetings, did an hour-long interview in the gazebo housed outside the Capitol building, which was erected so he can smoke his stogies. That evening, we went to a special premiere of the movie "Be Cool" starring John Travolta, Uma Thurman, The Rock and Vince Vaughan. I was sitting



McGough interviews Arnold in Columbus, last March.

next to Arnold and as the film opened he asked, "Who's that?" The object of the question was the rearview image of a gorgeous 30-foot blonde, wearing only bikini bottoms and lying facedown on a sun lounger.

"Uma Thurman," I replied. He nodded slowly, a slight flicker of the eyebrow indicating perhaps surprise, admiration, alarm or a combination of all three, that I could immediately identify, from that angle, the contours of the actress who puts the Um! in Uma. As a reward, he offered me some popcorn.

STRIKE THE POSE

The other standout memory was the photo shoot we did for the July 2007 issue of *Muscle & Fitness* to celebrate his 60th birthday. The concept was for Arnold to interact with life-size cutouts of images from his past. The cutouts were of him as a 16-year-old, as a 20-year-old, one from 1974, one from 1975, one as Conan The Barbarian and one as The Terminator. From the time he swept into the studio, the whole experience was a blast.

The initial setup was with an image of him flexing as a 16-year-old. Perusing that teenage image, he laughed at the trunks, remarking, "How d'ya like the world's shortest kilt?" Then he checked out the calf and arm development in the cutout and sighed, "Well, we all had to start somewhere." When the Terminator image came on set, Arnold immediately asked for a pair of sunglasses, popped them on, set his jaw and "zap," he went from governor to Terminator in an uncanny instant.

But the highlight was when the 1975 single biceps image of him winning the 1975 Mr. Olympia made its entrance. He immediately mimicked the shot and struck the pose "bang" perfectly. The left leg was slightly

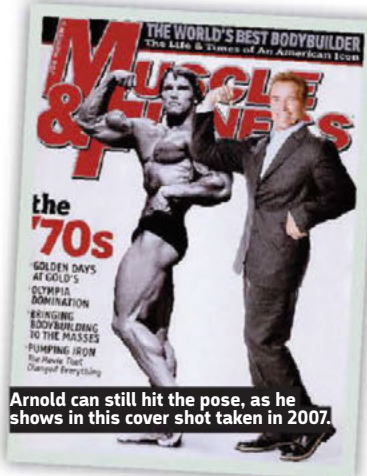


Peter McGough interviewing Arnold in February 2005 at the governor's office in Sacramento.

bent at the knee, left foot positioned correctly, left wrist turned and tucked into the hip. Right arm thrust forward with wrist bent inward, and damn if the biceps development wasn't clearly visible through the business suit. Topping it all off was that charismatic smile that has wowed, captivated and charmed audiences in different arenas for decades. (See accompanying photo of cover.)

In that snapshot scene for the ages, when the then-governor of the most populated state in the nation reached back across time to relive a Mr. Olympia moment, the whole studio—camera crew, governor's aides, stylists, etc.—burst into ecstatic applause. It was a magical moment.

It was a microcosm of what Arnold Schwarzenegger's life has been about. How all the lessons he learned in the gym have stayed with him forever, and have shaped his character and philosophy. How he prizes and rejoices in his bodybuilding roots and is still at heart—deep, deep, in his heart and in every fiber of his being—the greatest bodybuilder, and the greatest advocate of bodybuilding who ever lived. On behalf of all at MD, thanks for your support over the years, Mr. Schwarzenegger, and long may it continue. ■



Arnold can still hit the pose, as he shows in this cover shot taken in 2007.

Editor's Note: Peter would not include this in his column, but we feel we have to tell you a little story. At the annual Arnold seminar last March, Peter stood up to ask a question—but before he could say anything, Arnold said, "First of all I have to say that Peter McGough is one of the great writers and editors, and of course he and I have worked together on many stories, many layouts and many ideas of how to promote bodybuilding. I think the world of you, Peter, so it's so great to have you here and be part of the Arnold Weekend." That statement gives an indication of the high regard Arnold has for another member of Team MD.

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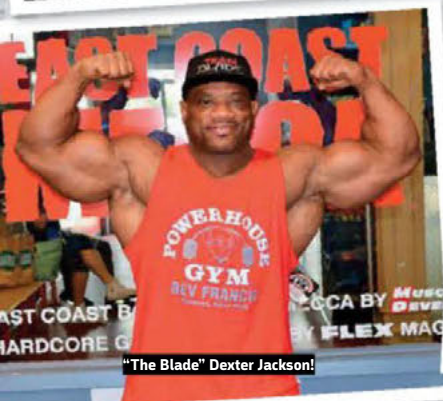
East Coast Mecca fixture Juan "Diesel" Morel takes home the title as King of New York!



IFBB Bikini Pro Stephanie Mahoe catches a workout after shooting for FitnessRx for Women.



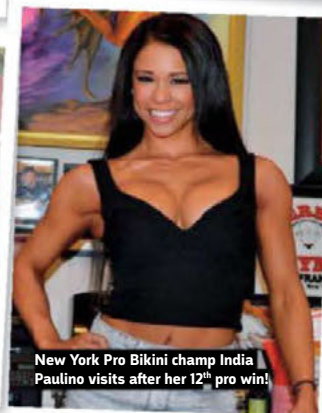
Big Steve and NPC News Online's Frank Sepe backstage at the New York Pro.



"The Blade" Dexter Jackson!



The massive Alexander Fedorov



New York Pro Bikini champ India Paulino visits after her 12th pro win!



212 Champ Guy Cisternino, Bethany Cisternino and Juan flashing the champion's ring.



Juan, Victor, Steve and Bev during MD's post-show photo shoots.

UPCOMING CONTEST SCHEDULE

JULY 3-4, 2015: NPC Universe Championships (Pro Qualifier) (Teaneck, NJ)
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JULY 11, 2015: NPC Northeast Summer Classic (White Plains, NY)
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OCTOBER 17, 2015: NPC Greater NY Championships (Syracuse, NY)
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SPECIAL GUEST: FOUR-TIME
MR. OLYMPIA JAY CUTLER. GUEST POSER: JUAN MOREL

OCTOBER 24, 2015: NPC New York State Grand Prix (Poughkeepsie NY)
ONLINE ENTRY & TICKET SALES—
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SPECIAL GUEST: THREE-TIME
OLYMPIA 212 CHAMP, FLEX LEWIS!

OCTOBER 31, 2015: NPC Eastern USA Championships (Teaneck, NJ)
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THE **W**EIGHT ROOM **GLOBAL** BODYBUILDING UPDATE

ADINA'S WORLD BY ADINA ZANOLLI

It was a big month on the international scene for IFBB pro bodybuilders. With the majority of Olympia-qualified athletes coming from outside the United States, Canadian Fouad Abiad increased this number by taking a win at the Europa Games. For whatever reason, Americans have been sitting out a majority of the shows this year. One day, we'll look back and ask them why. For now, we just continue to be surprised by the lack of depth in the lineups.



FOUAD ABIAD TAKES THE WIN IN ORLANDO

Score one for Canada! IFBB pro bodybuilders from outside the states showed up in force at the Europa Games Orlando to take four of the top five spots. In fact, the show was so stacked with international bodybuilders that the lineup was two-thirds from outside of the USA. Considering how many guys have yet to qualify, this was a real head-scratcher to those of us in attendance.

While many of the guys were guest-posing at Jim Manion's Pittsburgh Pro, many non-qualified guys were a no-show at both contests. At any rate, it was a very emotional victory for Abiad, who was sure to thank his support system in a very tearful and heartfelt victory speech. His wife joined him onstage, and he was almost to overcome to speak.

HERE'S A LOOK AT HOW THE PLACINGS FELL IN ORLANDO:

1. Fouad Abiad (Canada)
2. Michael Lockett (USA)
3. Alexander Fedorov (Russia)
4. Pablo Ayala Zayas (Paraguay)
5. Daniel Toth (Hungary)
6. Alfonso Del Rio (Spain)
7. Iain Valliere (Canada)
8. Ryan Pateracki (USA)
9. Vitaly Fateev (Russia)
10. Marius Dohne (South Africa)
11. Feras Saied (Italy)
12. Mark Erpelding (USA)
13. Lloyd Dollar (USA)
14. Derek Upshaw (USA)
15. Nikitas Manolakis (Greece)



VENEZUELAN MANUEL ROMERO ON THE MOVE

Could this be a breakout year for Venezuelan IFBB pro Manuel Romero? He broke into the top 10 twice last year, and is currently prepping to take the stage for the first time this year in Chicago. Time will tell, but we're calling him one to watch for this year.

OLYMPIA QUALIFICATION BREAKDOWN BY THE COUNTRY

When you look at who's qualified for the 2015 Olympia, it drives home that bodybuilding really is a global event. With Americans like Branch Warren, Steve Kuclo, Evan Centopani and Justin Compton yet to be firmly qualified, international athletes keep showing up and taking the win.

Who is qualified as of now? Here's the list as it stands as this issue went press. You can always check the website for up-to-the minute additions.

Phil Heath (USA)
Kai Greene (USA)
Shawn Rhoden (USA)
Dennis Wolf (Germany)
Dexter Jackson (USA)
Roelly Winklaar (Curaçao)
Essa Obaid (United Arab Emirates)
Mohammad Ali Bannout (Lebanon)
William Bonac (Netherlands)
Ronny Rockel (Germany)
Abdelaziz Jellali (Morocco)
Fouad Abiad (Canada)
Juan Morel (USA)



What's next on the international scene? Canada, Madrid, Prague and more! If we're headed your way, please let us know! We're always interested in stopping by the home gyms of our readers. We know how to find the major chain gyms, but what we really like to visit when aboard are the locally owned, hardcore gyms. Sound like your gym? Shoot me a message: adina@musculardevelopment.com.

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BY ADINA ZANOLLI

We're halfway through another year, and things are moving right along at www.musculardevelopment.com. Take a look at what's new.

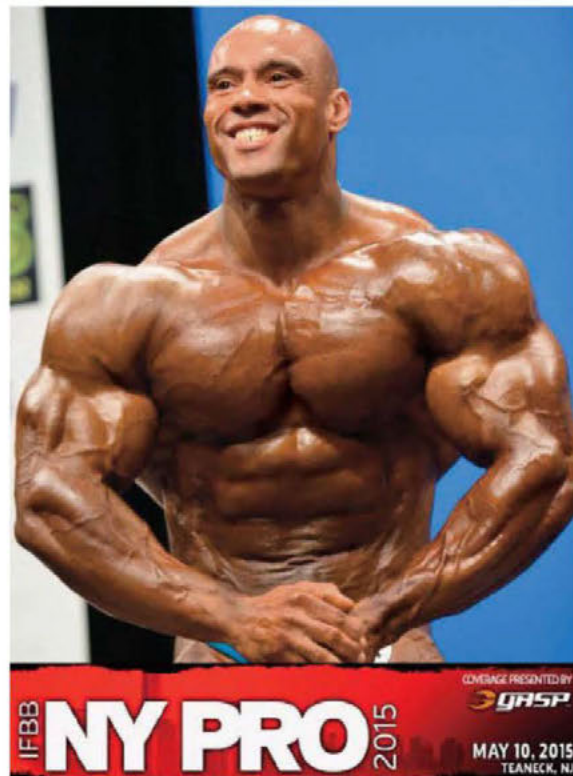
PITTSBURGH PRO

One of the highlights of the year for anyone who covers contests is Jim Manion's Pittsburgh Pro. We sent Louis Uridel to cover the event for MD, and he came back with tons of videos of the guest posers. Why is the event so special? Where else can you see Phil Heath, Kai Greene, Dexter Jackson, Shawn Rhoden, Brach Warren, Dennis Wolf, Big Ramy and Guy Cisternino guest-posing together? Nowhere else, and that's exactly what makes this event so special. You can find the videos off the MD homepage or on our YouTube page. Be sure to check out the interviews Louis got with Dennis Wolf and Shawn Rhoden for an extra treat. Louis considers these a check mark off his bucket list of interviews! When someone loves what they do, it shows in the finished product!



IN THE TRENCHES

We've added a few new videographers to our rosters, so the number of In the Trenches videos is about to go up. Our most recent favorites are two of Dennis Wolf in the off-season. We're also in the edit phases of a few new ones, including the likes of IFBB Pro Manuel Romero. We're looking to follow a few guys going after their IFBB pro cards this year. Big Jon Ward is hard on the hunt for his, and we'll be following him as he heads into the NPC USAs. Let us know who you'd like to see more of or less of! If there's a guy in your gym who is not on our radar yet, let us know that too!



One of the most recent galleries we've added to our contest gallery is from the 2015 New York Pro. The show made a big change this year and moved the action to Teaneck, New Jersey, where the NPC Universe is held. In the end, Juan Morel was the last man standing, beating his mentor, Victor Martinez, by a very close margin. In the preceding years, Juan has placed fourth, third, second and now first. If you head to the contest gallery, you can find pictures of each year of Juan's progression and see the changes he's made to his physique over the years.

SCORING AN INDUSTRY JOB

More than anything else, I get asked how I got this job or how to get a job in this industry. Start by visiting the website. I started as a forum member in 2008 and had this job by December 2012. Crazy, right? I knew only one person the day I signed up for a screen name. From there, participate. David Baye came to us by way of the forums and has now traveled the world for Team MD. Videographer Nick Del Toro also started as a forum member. It won't happen in one post. Just keep coming back and voicing your opinion. It's a great way to put yourself out there and make yourself known!

Thank you for your continued support of the MD website! We've got some new video series coming your way over the next few months. Be sure to check them out and let us know what you think! Email me at adina@musculardevelopment.com.

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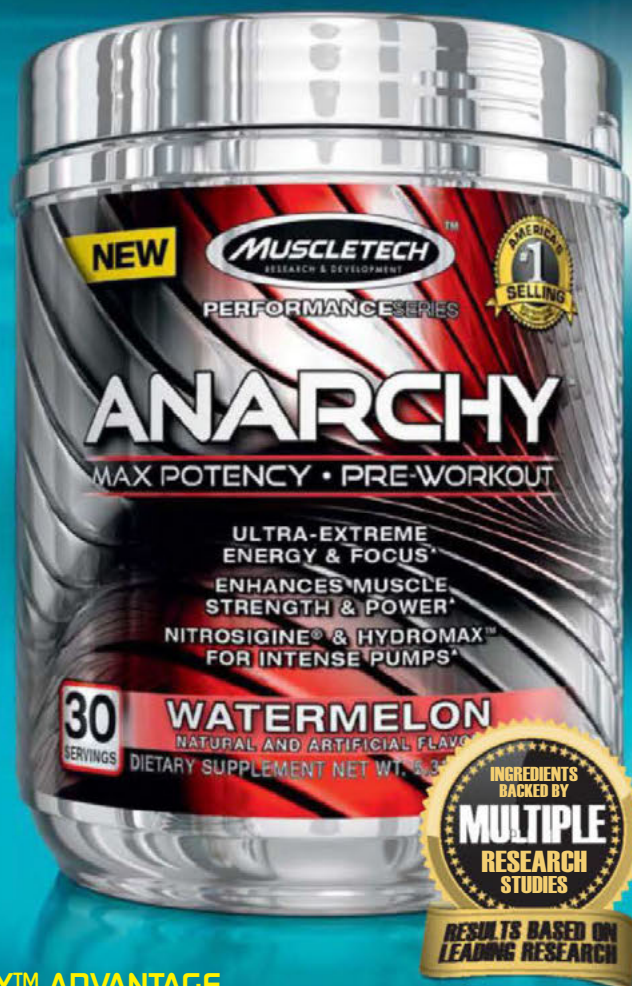


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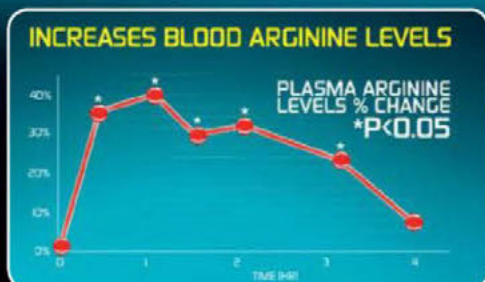
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- Ingredients backed by multiple research studies
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Just check out our fully disclosed label to see for yourself why Anarchy™ is the only pre-workout that delivers unmatched performance, unlike obsolete formulas that underdose their ingredients. And because it's from MuscleTech®, the trusted brand backed by 20 years of excellence, you know it's a best-in-class formula that delivers results. Get it today.



THE ANARCHY™ ADVANTAGE



Nitrosigine® has been clinically shown to boost blood arginine levels in test subjects within just 1 hour of their first dose.

	ANARCHY™	COMPETITOR 1	COMPETITOR 2	COMPETITOR 3
Nitrosigine®	1.5g	Zero	Zero	Zero
HydroMax™	1g	Zero	Zero	Zero
L-theanine	150mg	Zero	Zero	Zero
Choline bitartrate	200mg	Zero	Zero	Undisclosed Amount
Rhodiola	100mg	Zero	Zero	Zero
Beta-alanine	3.2g	3g	Zero	2g

Amounts displayed in chart are based on a full dose.

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1,000 MC HYDROMAX™

HydroMax™ Glycerol is 10 times more concentrated than the competitor's glycerol monostearate.

1,500 MC NITROSIGINE®

Nitrosigine® is a novel form of arginine and silicon that's been clinically shown to increase nitric oxide levels in research conducted at a human performance lab at a prestigious research center in Miami.

3,200 MC PATENTED CARNOSYN®

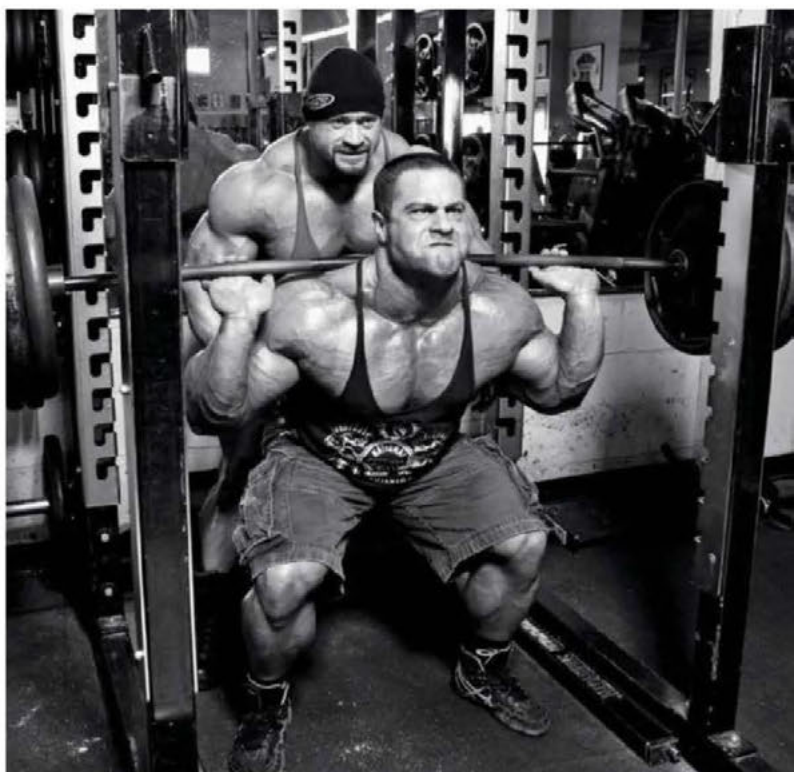
2 scoops of Anarchy™ deliver 3,200mg of patented CarnoSyn® beta-alanine. This is more than the competition. It has also been shown to accelerate musclebuilding in a study published in the *Journal of Strength and Conditioning Research*.



*Per 2 scoops. Nitrosigine® is protected under U.S. patent numbers #5,707,970; #6,156,735; #6,344,444; #7,576,132. The Nitrosigine® name and logo are federal trademarks of Nutrition 21, LLC. CarnoSyn® is protected under U.S. patent numbers #7,825,084; #8,067,381; #8,129,422; #8,470,865. CarnoSyn® trademarks are owned by Natural Alternatives International, Inc. HydroMax™ is a trademark of Glanbia Nutritionals. Facebook logo is owned by Facebook Inc. Read the entire label and follow directions. © 2015

Coping With Overtraining

COACHES AND ATHLETES, IN THEIR QUEST FOR BETTER PERFORMANCE, FOLLOW INTENSE TRAINING PROGRAMS IN THE HOPE OF GAINING AN EDGE OVER THE COMPETITION. However, a fine line exists between programs that improve condition and those leading to overtraining. Overtraining is an imbalance between training and recovery. The consequences can be severe and include decreased performance, injury, depressed immunity and psychological depression. Training programs must be intense enough to improve fitness and skill, yet provide enough rest to ensure adequate recovery. Chronically overtrained athletes who get injured or crash may never reach their former levels of performance. Unfortunately, there is no single marker of overtraining. Instead, it is linked to a variety of symptoms that include decreased performance, overuse injuries, elevated resting heart rate, markers of muscle damage (i.e., creatine kinase), depressed testosterone, elevated or depressed cortisol, frequent illnesses, psychological depression and abnormal behavior. Hard work is important for increased fitness, muscle mass and strength, but overwork leads to breakdown and failure. (ACSM's Health & Fitness Journal, 19 (2): 4-5, 2015)



Back Squat Assessment

SQUATTING IS AN ESSENTIAL WEIGHT-TRAINING EXERCISE THAT BUILDS A STRONG FOUNDATION FOR BODYBUILDERS AND POWER ATHLETES.

However, most people squat incorrectly because they've never been instructed properly or they are more interested in pushing big weights than developing good mechanics. A group of 14 distinguished scientists and strength practitioners combined their efforts to develop a back squat assessment tool, which is a detailed checklist of the do's and don'ts of squatting. The checklist includes evaluation procedures for the position of the head, thorax, trunk, hips, knees, shin and feet, as well as movement mechanics during descent and ascent. These evaluation procedures can help athletes and coaches get the most out of this powerful exercise. (Strength and Conditioning Journal, 36: 4-27, 2014)

Timing of Muscle Protein Synthesis Different in Trained and Untrained

RESISTIVE EXERCISE AND CONCENTRATED AMOUNTS OF PROTEIN TRIGGER MUSCLE PROTEIN SYNTHESIS. Felipe Damas from the University of São Paulo in Brazil and co-workers, in a review of literature, concluded that the time course of muscle protein synthesis is different in trained and untrained people. In untrained people, the rate of protein synthesis peaks at 20 hours after the workout and remains elevated for at least 48 hours. In trained people, on the other hand, protein synthesis

peaks within two hours and decreases substantially by 10 hours. These findings have important practical implications. Trained people should consume 25 to 35 grams of whey protein immediately following exercise. The timing of protein synthesis is probably not as important in untrained people because of the prolonged nature of the process. Building muscle becomes more difficult as you become more advanced and trained. (Sports Medicine, published online March 6, 2015)

DON'T STRETCH BEFORE YOU LIFT!

UNTIL RECENTLY, PRACTICALLY ANY EXERCISE BOOK RECOMMENDED PRE-EXERCISE STRETCHING AS PART OF WARM-UP. Training experts thought that stretching increased range of motion and reduced the risk of injury during the subsequent workout. That's changed. Many studies have shown that static stretching before exercise decreases strength and power, and might actually increase the risk of injury. Marcos Sá from the University of Rio de Janeiro, Brazil, and colleagues found that static or ballistic stretching before weight training decreased strength endurance capacity during a weight-training program compared to a specific warm-up. This study was important because it showed that static stretching affects muscle endurance as well as strength and power. (Journal of Human Kinetics, 45: 177-185, 2015)



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PLATINUM 100% WHEY

In clinical research from St. Francis Xavier University, test subjects taking the key ingredient in Platinum 100% Whey built 51 lbs. of lean muscle and added 14 lbs. to their bench press.

PLATINUM 100% ISO-WHEY

With a filtration process that reduces lactose, ash and fat, Platinum 100% Iso-Whey delivers bioactive protein fractions with the highest biological value (104 BV) to deliver a premium protein source with more musclebuilding potential.

PLATINUM 100% CASEIN

Leading university research from France showed that subjects consuming the same dose of premium casein found in Platinum 100% Casein experienced a 34% decrease in total body protein breakdown after 7 hours.

PLATINUM 100% BEEF PROTEIN

Platinum 100% Beef Protein features the highest quality 98% isolate protein that's 390% more concentrated than steak, and is free of fat, sugar, cholesterol and lactose.



¹The American Masters of Taste, a prestigious panel of chefs and flavor experts, awarded MuscleTech® Platinum 100% Whey, Platinum 100% Iso-Whey, and Platinum 100% Casein the Gold Medal for Superior Taste. Facebook logo is owned by Facebook Inc. Read the entire label and follow directions. © 2015

Multiple Sets More Effective Than One Set for Increasing Strength and Power

HEALTH ORGANIZATIONS SUCH AS THE AMERICAN COLLEGE OF SPORTS MEDICINE RECOMMEND THAT BEGINNING EXERCISERS PERFORM ONE SET OF ABOUT EIGHT EXERCISES. Experienced athletes, on the other hand, typically perform multiple sets. Regis Radaelli from Brazil, and co-workers, found that three or five sets per exercise was superior to one set for building

strength, local muscular endurance and muscle size. The study lasted six months and included the bench press, lat pull, shoulder press and leg press. All test subjects decreased body fat and increased lean mass and vertical jump height. One set per exercise will help build strength, but multiple sets are better. (Journal Strength Conditioning Research, 29:1349-1358, 2015)

Tapering for Peak Performance



CUTTING DOWN ON TRAINING VOLUME AND INTENSITY BEFORE A COMPETITION CAUSES A RAPID INCREASE IN PERFORMANCE. This process is called peaking or tapering. Tapering is tricky: reducing the workout intensity and volume too soon decreases fitness, while working too hard close to competition compromises recovery and peak performance. Most studies show that a two-week taper that gradually reduces the training volume by 41 to 60 percent, without changing the training intensity or frequency, is best for maximizing performance during the target competition. In other words, do short, high-intensity training sessions beginning two weeks before competitions or games. Cut down on volume but not intensity. This strategy probably works for strength and power sports. (Strength Conditioning Journal, 37(2): 72-83, 2015)

HIIT Plus Weight Training Builds Strength and Endurance

ENDURANCE TRAINING INTERFERES WITH STRENGTH TRAINING BECAUSE THEY TRIGGER DIFFERENT BIOCHEMICAL PATHWAYS LEADING TO IMPROVEMENTS IN EITHER STRENGTH OR ENDURANCE. HIIT training involves repetitions of short bouts of high-intensity exercise followed by rest. British researchers led by Jamie Pugh from Loughborough University found that combining resistance exercise with HIIT activated the mTOR pathway and suppressed myostatin, which results in accelerated protein synthesis. Combining HIIT and weight training in a single workout is a good way to build strength and endurance simultaneously. (Physiological Reports, 3(4): E12364, 2015)

Occlusion Training + Light Weight Training Effective for Older Adults

OCLUSION OR TOURNIQUET TRAINING INVOLVES EXERCISING WITH RESTRICTED BLOOD FLOW TO THE WORKING MUSCLES. Blood flow restriction during low-intensity weight training triggers muscle hypertrophy because it creates severe metabolic stress that stimulates muscle protein synthesis and hypertrophy. Decreasing muscle blood flow may trigger cell damage, inflammation, cell stress and anabolic hormone release. Muscles grow in response to physical and chemical stress, so it seems reasonable that restricting blood flow to muscles during training might promote hypertrophy. The combination of blood flow occlusion and light weight strength training might be an excellent method for improving strength and power in older adults with a low tolerance for exercise. (Korean Journal Physiological Pharmacology, 19: 191-196, 2015)

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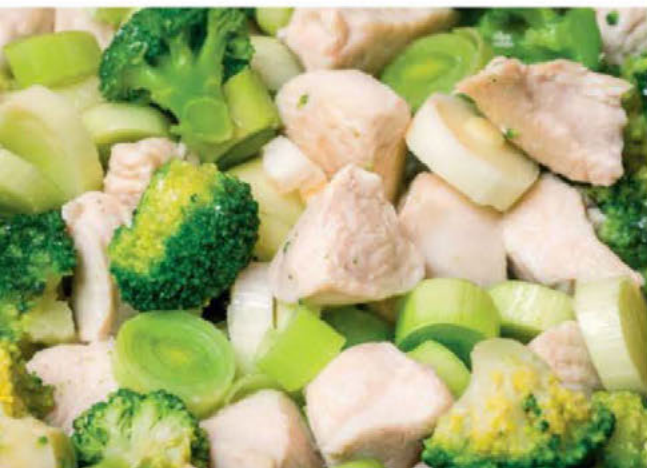
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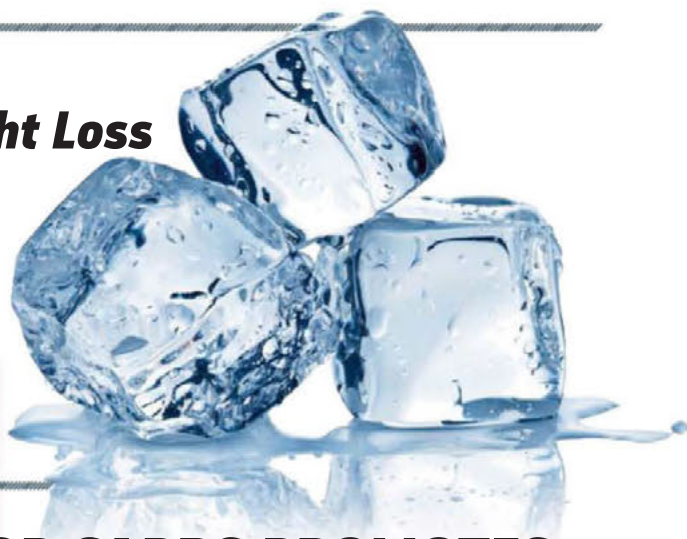


HIGH-PROTEIN, LOW-CALORIE DIETS PROMOTE WEIGHT LOSS

HIGH-PROTEIN DIETS ARE EFFECTIVE FOR PREVENTING OR TREATING OBESITY BECAUSE THEY INCREASE METABOLISM, SUPPRESS APPETITE AND REDUCE CALORIC INTAKE— ACCORDING TO A LITERATURE REVIEW LED BY HEATHER LEIDY FROM THE UNIVERSITY OF MISSOURI SCHOOL OF MEDICINE, AND COLLEAGUES. Comparisons of weight-loss diets high in carbohydrates, protein or mixed nutrients consistently show that the high-protein diets are most effective for weight loss. As expected, high-protein diets are most effective in people who actually adhere to the weight-loss program. High-protein diets contain between 1.2 and 1.6 grams of protein per kilogram of bodyweight. Each meal should contain 25 to 30 grams of protein. (American Journal of Clinical Nutrition, published online April 29, 2015)

‘COLD SHOULDER’ Activates Brown Fat and Promotes Weight Loss

THE “COLD SHOULDER” IS A VEST FILLED WITH ICE THAT IS DESIGNED TO PROMOTE CALORIE BURNING. WAYNE HAYES, A NASA SCIENTIST AND PROFESSOR, DESIGNED THE VEST. The cold induced by the vest stimulates a tissue called brown fat to generate heat. Brown fat is an interesting tissue because it burns calories rather than storing them as fat. Cold exposure triggers increased brown fat activity, which promotes fat loss. The makers of the vest recommend that you take it out of the freezer, put it on and wear it until the ice melts. As your brown fat adapts, wearing the vest will dissipate about 500 calories. The vest costs about \$150. See coldshoulderweightloss.com for more information. (New Scientist, April 15, 2015)



SUBSTITUTING PROTEIN FOR CARBS PROMOTES LONG-TERM FAT LOSS

GLYCEMIC LOAD IS A MEASURE OF HOW MUCH A FOOD INCREASES BLOOD SUGAR OVER TIME. Foods such as refined grains, starches and sugars have a high glycemic load and promote weight gain. Decreasing the glycemic load by increasing protein intake could have a significant effect on long-term weight control— according to a Harvard University study led by Jessica Smith. Changing the dietary composition toward more protein and away from simple carbohydrates may be just as important as counting calories for weight loss. Foods such as yogurt, seafood, skinless chicken and nuts are good choices for weight reduction. (American Journal of Clinical Nutrition, published online April 8, 2015)

The Importance of HEAT PRODUCTION IN HUMANS

HUMANS, LIKE ALL MAMMALS, ARE HOMEOTHERMS, WHICH MEANS THAT THEY MAINTAIN A NEAR-CONSTANT BODY TEMPERATURE. Even small changes from the normal body temperature of 98.6 degrees Fahrenheit can cause serious decreases in performance and even death. Metabolism is the principal source of heat production in humans. The body can also produce heat through thermogenesis, which is heat generation in addition to normal metabolism. Examples include shivering and activation of brown fat. We can also slow heat loss by wearing clothing. Brown fat contains uncoupling proteins that dissipate energy as heat rather than storing it as fat. We can increase brown fat activity naturally through cold exposure. (Trends in Endocrinology and Metabolism, 26: 238-247, 2015)



SCIENTIFICALLY RESEARCHED CORE WEIGHT LOSS INGREDIENT

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SUBJECTS LOST 10.95 LBS. IN 60 DAYS!

New **Hydroxycut® SX-7® Black Onyx™** is a hardcore, cutting-edge formula that's super-charged with 7 premium ingredients in a never-before-seen combination for a powerful sensory experience. It also features the scientifically studied core weight loss ingredient green coffee, which helped test subjects lose an average of 10.95 lbs. in 60 days with a low-calorie diet, and 3.7 lbs. in 8 weeks with a reduced-calorie diet and moderate exercise. Just one powerful dose of **Hydroxycut® SX-7® Black Onyx™** delivers an unrivaled sensory overload in a fully disclosed max-strength formula!

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- Fully disclosed – zero proprietary blends
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SCIENTIFICALLY RESEARCHED KEY WEIGHT LOSS INGREDIENT

STUDY 1 – 60 DAYS



In research published in the scientific journal *Phytothérapie*, test subjects supplementing with 200mg of standardized green coffee lost, on average, 10.95 lbs. in 60 days with a low-calorie diet. In a separate study, subjects lost an average of 3.7 lbs. in 8 weeks while following a low-calorie diet and performing moderate exercise.

*Individual received a free sample

"From the very first dose you can feel it take effect – a boost of focus & energy."

– Reviewed at GNC.com*



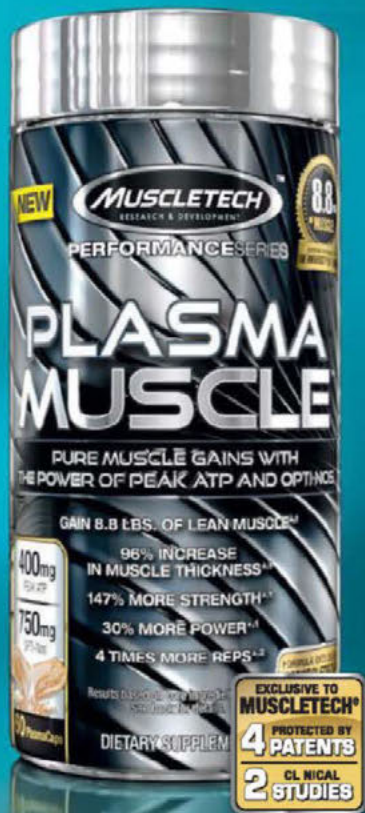
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MD **FAT LOSS** CUTTING-EDGE RESEARCH

New Role For BROWN FAT in the Control of Metabolism

SCIENTISTS HAVE KNOWN ABOUT BROWN FAT FOR YEARS. HOWEVER, IT WAS ONLY RECENTLY THAT WE DISCOVERED ITS IMPORTANCE IN HUMAN PHYSIOLOGY. Unlike white fat, brown fat dissipates energy as heat instead of storing it as fat. Activating brown fat increases calorie burning, reduces whole-body fat and lowers blood sugar and blood fat levels. New research shows that brown fat also secretes chemicals that help regulate metabolism. Exposure to cold is the best way to increase brown fat stores. However, exercise can make regular fat cells more like brown fat, which would promote weight control. (Trends in Endocrinology & Metabolism, 26: 231-237, 2015)

CHEMICAL IN APPLES Promotes FAT LOSS



URSOLIC ACID IS A CHEMICAL FOUND IN APPLES, BASIL, CRANBERRIES, PEPPERMINT, OREGANO AND PRUNES. IT IS USED IN A VARIETY OF COSMETIC PRODUCTS AND CAN INHIBIT THE GROWTH OF SOME TYPES OF CANCER CELLS. A Chinese study on rats found that ursolic acid supplements reduced bodyweight, increased caloric expenditure and decreased fat levels in muscle. Ursolic acid promoted fat loss by increasing the activity of uncoupling proteins in the cells, which causes fat loss by promoting heat formation. Ursolic acid is also anabolic. A University of Iowa study in mice found that ursolic acid found in apple peels prevented muscle deterioration following fasting and spinal cord injury. Ursolic acid supplements also increased muscle mass in normal mice. The anabolic effect of ursolic acid is caused by increased insulin signaling in skeletal muscle and the suppression of gene activity linked to atrophy (decreased muscle size). Ursolic acid might speed fat loss and build muscle. (Molecular Nutrition & Food Research, published online May 5, 2015)

LIMOSTATIN Suppresses Insulin Secretion

A HORMONE CALLED LIMOSTATIN SUPPRESSES INSULIN SECRETION DURING CARBOHYDRATE RESTRICTION, ACCORDING TO A STUDY LED BY RONALD ALFA FROM STANFORD UNIVERSITY SCHOOL OF MEDICINE. The scientists discovered the hormone in fruit flies. In humans, problems with limostatin metabolism are linked to obesity. Cells in the gut produce the hormone. Understanding the metabolism of this new hormone might help scientists understand the mechanisms of obesity in humans. (Cell Metabolism, 21: 323-333, 2015)

Ketogenic Diets Suppress Appetite

THE BRAIN USES MAINLY GLUCOSE (SUGAR) FOR FUEL, BUT IT CAN ALSO USE KETONES AND LACTATE. DURING LOW-CALORIE DIETING, THE BODY PRODUCES KETONES TO SUPPLY FUELS TO THE BRAIN. The liver produces ketones that come from fatty acids released during fat breakdown that occurs due to low calorie intake. A literature review by researchers from the University of Copenhagen in Denmark concluded that ketones produced during very low-calorie diets suppress appetite slightly. Ketogenic diets (i.e., low-calorie diets that result in ketone production) decrease appetite and increase the feeling of fullness, even during severe caloric restriction. Normally, appetite increases during low-calorie dieting. Endurance athletes typically fail to make fitness gains while following ketogenic diets, but strength athletes can follow the diet with little effects on performance. However, it is difficult to gain muscle mass when following the diet. (Exercise and Sport Sciences Reviews, published online April 22, 2015)

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- A powerful, premium combination of the sensory ingredients *Myristica fragrans*, *Ecklonia cava*, holy basil and grains of paradise
- Better focus, energy, pumps and performance
- Fully disclosed formula
- Research published in the journal *Nutrition & Metabolism*
- Purity and quality tested by a U.S. certified independent third-party lab



Based on research conducted at The University of Tampa and published in *Nutrition & Metabolism*.



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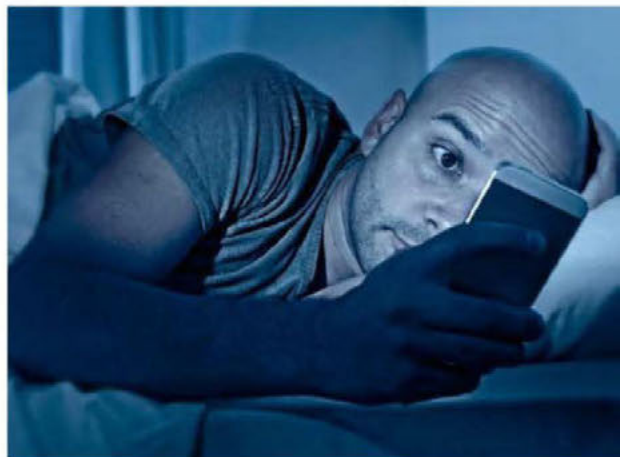
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TABLETS AND SMARTPHONES Are Robbing You of Sleep

IN 1900, PEOPLE SLEPT NINE HOURS A NIGHT. That declined to seven hours a night in the 1970s and decreased further until today. Inadequate sleep is linked to poor concentration, anxiety, loss of energy, decreased learning ability, reduced attention to detail and motor vehicle accidents. How did sleep, which came so naturally, suddenly become a crisis? What is the smoking gun that explains modern sleep problems? Scientists found that the culprit is an unusual suspect hiding in plain sight— smartphones, tablets, backlit e-readers and computer screens. These devices emit light, particularly blue light that disturbs biochemical processes that promote sleep. They also increase exposure to electromagnetic radiation, which is linked to insomnia, headache and confusion. The radiation from cell phones interferes with brain centers that secrete hormones and influence many aspects of body function. Our bodies pay a price from surrounding ourselves with fancy smartphones, tablets and light-emitting gadgets— the price is lost sleep. (Proceedings National Academy Of Sciences, USA 112: 1232-1237, 2015)



WEIGHT TRAINING Improves Sleep Quality

INADEQUATE SLEEP AND POOR SLEEP QUALITY ARE LINKED TO PREMATURE DEATH, CARDIOVASCULAR DISEASE, DIABETES AND ABDOMINAL OBESITY. Regular endurance training improves sleep quality. Scott Collier, Jessica Alley and co-workers from Appalachian State University in North Carolina found that weight training helped people go to sleep faster and improved sleep quality. When they trained (morning, afternoon or evening) had no effect on sleep structure or nighttime blood pressure. People need six to eight hours of good-quality sleep per night for optimal health. They concluded that weight training might be particularly beneficial for promoting sleep in people with bone or muscle loss, and those with psychological disorders. (Journal Strength Conditioning Research, 29: 1378-1385, 2014)

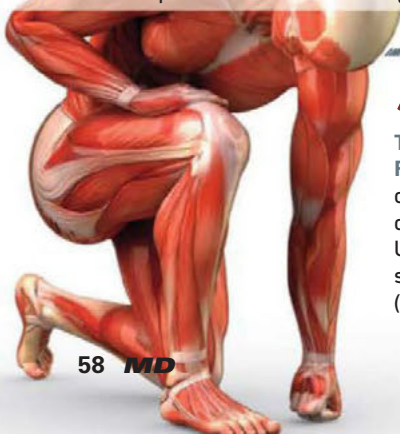
When Do Men Need Testosterone Supplements?

LOW TESTOSTERONE LEVELS MAKE MEN FEEL ROTTEN! Symptoms include fatigue, depression, loss of energy, decreased sex drive, abdominal obesity, poor blood sugar regulation and erectile dysfunction. Low blood levels of total testosterone are not enough to warrant testosterone supplements— according to Shehzad Basaria from Harvard Medical School. Diagnosis requires two separate measurements of total testosterone, measurement of serum hormone-binding globulin and free testosterone to determine if symptoms are due to low testosterone levels or something else. The normal range for total testosterone is 300 to 900 nanograms per 100 milliliters of blood. Many anti-aging specialists believe that middle-aged and older men should have testosterone levels of 800 to 900 for optimal health and well-being. (Journal American Medical Association, 313: 1749 - 1750, 2015)



Scientists Developing Artificial Knee Cartilage

THE KNEE MENISCI ARE TWO CRESCENT-SHAPED FIBROCARILAGES THAT CUSHION AND HELP REGULATE FLUID MOVEMENT IN THE KNEE. They help distribute bodyweight and reduce friction during movement. They are often injured during sports, which can cause arthritis and deterioration of the knee joint later in life. Surgical repair or removal of these structures often leads to unsatisfactory results. Scientists from Cornell University and Columbia University have developed artificial knee cartilages using a 3-D printer and stem cells. The procedure has been tested successfully in sheep. If it works in humans, it could reduce the long-term risk of knee arthritis and joint replacement. (The Wall Street Journal, May 6, 2015)



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Young Adults With High Cholesterol Have Increased Risk for Heart Disease

PHYSICIANS TYPICALLY TREAT MIDDLE-AGED ADULTS WITH HIGH BLOOD FAT LEVELS WITH DRUGS CALLED STATINS TO REDUCE BLOOD CHOLESTEROL. High blood cholesterol levels are linked to an increased risk of heart attack and stroke. Scientists from Duke University Medical Center, led by Ann Marie Navar-Boggan, showed that young adults with elevated cholesterol levels had a greater risk of developing coronary artery disease than those with normal cholesterol. The study examined young adults and followed them for an average of 15 years. The researchers concluded that aggressive treatment of high cholesterol might be warranted in young adults in their 20s. (Circulation, published online January 26, 2015)

Training and Competing in the Heat

A distinguished group of international environmental physiologists made recommendations for exercising in the heat:

- Athletes should acclimatize to heat by training in hot climates for at least 60 minutes per day for two weeks.
- Tank up before training or competing in the heat by drinking six milliliters per kilogram of bodyweight every two to three hours until normally hydrated.
- Minimize weight loss during prolonged exercise in the heat by replacing fluids appropriately.
- Increase sodium intake when training or competing in the heat.
- Rehydrate after exercise by consuming enough fluids and electrolytes to offset 100 to 150 percent of lost weight. Rehydrating regimens should include sodium, carbohydrates and protein.
- Cooling methods include wearing ice garments, cold towels, water immersion and ingestion of cold fluids or ice. Precooling may benefit athletes involved in prolonged exercise.

Acclimatization, hydration and cooling are vital skills for athletes competing in the heat. (Scandinavian Journal Medicine Science Sports, 25 (Supplement 1): 6-19, 2015)



Core Training Effective for Reducing Back Pain

THE CORE MUSCLES IN THE TORSO PROVIDE A STABLE MIDSECTION VITAL TO ALL MOTIONS AND POSTURES. The core muscles stabilize the spine and help to transfer force between the lower and upper body. They stabilize the midsection when you sit, stand, reach, walk, jump, twist, squat, throw or bend. A meta-analysis by researchers from Taiwan showed that strengthening core muscles, particularly deep muscles such as the quadratus lumborum, make movements more forceful and preserve a healthy spine to help prevent back pain. They tone muscles without damaging the fragile spinal disks and will give you a lean, toned midsection and functionally strong core muscles that work together flawlessly to maintain a pain-free spine that hopefully will last a lifetime. (Journal Physical Therapy Science 27: 619-622, 2015)

TYLENOL VS. ADVIL



PAIN IS A NATURAL PART OF ATHLETICS AND EXERCISE. Push too hard and your joints ache. Get overheated or overstressed and your head hurts. Most active people use pain relievers to get them out of tight spots. Which should you use and when? Acetaminophen (Tylenol) is your best bet for headaches, while ibuprofen (Advil) is better for achy and inflamed joints. Excessive use of these drugs is not recommended. Acetaminophen in high doses is toxic to the liver, and overdose is the principal cause of liver failure in the United States. Overuse of ibuprofen can cause ulcers and stomach upset, and can slow adaptations to weight training. Both drugs are effective for decreasing pain, but don't overuse them. (The Wall Street Journal, May 11, 2015)

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Higher Nut Consumption Linked to Reduced Heart Attack Risk

NUTS ARE CONSIDERED HEART-HEALTHY FOODS. However, most studies showing the nutritional value of nuts used people in higher socioeconomic groups of European descent. A study from Vanderbilt University School of Medicine in Nashville, Tennessee showed that higher nut consumption was linked to a reduced rate of death from all causes and from cardiovascular disease, in a sample of more than 200,000 people of low socioeconomic status. The results were consistent for blacks, whites and Asians. Peanuts were the most prevalent form of nut consumption. Eating more peanuts might be a cost-effective way of improving cardiovascular health in various socioeconomic groups. (Journal American Medical Association Internal Medicine, 175: 755-766, 2015)



Omega-3 Fatty Acids Improve Endurance

OMEGA-3 FATTY ACIDS— FOUND IN FISH, WALNUTS, SOYBEANS, BEEF AND SHRIMP—PROMOTE BLOOD VESSEL HEALTH AND REDUCE THE RISK OF HEART ATTACK AND STROKE. Polish researchers found that omega-3 supplements improved endurance capacity in cyclists by increasing concentrations of nitric oxide by eight micromoles per liter, and boosting muscle blood flow by over five percent compared to a placebo (fake omega-3). This study agrees with several investigations from the University of Tokyo, which found that supplementing omega-3 rich fatty acids boosted exercise efficiency. Subjects took a daily dose of 3.6 grams per day of the omega-3s EPA and DHA. (European Journal of Sports Science, 15: 305-314, 2015)

BOGUS EXTRA-VIRGIN OLIVE OIL

OLIVE OIL REDUCES INFLAMMATION AND FIGHTS DESTRUCTIVE CHEMICALS IN THE BODY THAT PROMOTE DISEASE. It may be one of the reasons that the Mediterranean diet— high in olive oil, pasta, fruits, vegetables, nuts, lean meats and red wine— promotes long life and reduces the risk of heart disease and cancer. Olive oil brands use terms such as “virgin,” “pure” or “extra pure,” which are confusing to the average consumer. Most of these terms are hype, according to David Neuman, CEO of Gaea— an olive oil company. According to taste tests conducted by Consumer Reports, some of the cheapest brands of olive oil are the best. Goya olive oil cost 24 cents per ounce, yet tasted nearly as good as more expensive, designer brands that cost more than \$1.20 per ounce made by McEvoy Ranch and B.R. Cohn. The Kirkland brand (Costco) at 12 cents per ounce also received good ratings. Buy olive oil by price for cooking, but choose by taste for salads. Olive oil consumption in the United States has doubled since 1992, with more than 62 million gallons sold last year. (Foodnavigatorusa.com, April 23, 2015)



Cherry Juice Reduces Upper Respiratory Problems After Marathon Run

UPPER RESPIRATORY INFECTIONS ARE COMMON FOLLOWING COMPETITIVE MARATHON RUNNING. Extreme levels of exercise cause general body inflammation and suppress the immune system. British researchers found that marathon runners who took cherry juice after a race showed reduced inflammation as measured by levels of C-reactive protein, immunoglobulin A, immunoglobulin B, and a reduced incidence of upper respiratory infections compared to a placebo (fake cherry juice). Cherry juice is the real deal for protecting muscle tissue from damage during intense exercise ranging from marathons to monster weight-training workouts. Chemicals in cherry juice, such as flavonoids and anthocyanins, prevent muscle oxidative damage and inflammation associated with exercise recovery. Cherry juice might be useful for reducing sports injuries, preventing upper respiratory infections and promoting recovery. (Journal International Society Sports Nutrition, 12:22, 2015)



Whole Grains Promote Longevity

EATING MORE WHOLE GRAINS IS ASSOCIATED WITH INCREASED LONGEVITY AND A LOWER DEATH RATE FROM CARDIOVASCULAR DISEASE, ACCORDING TO A STUDY OF MORE THAN 110,000 PEOPLE LED BY HONGYU WU FROM THE HARVARD UNIVERSITY SCHOOL OF PUBLIC HEALTH. Death rates from cancers were not altered by whole grain consumption. Consuming whole grains may reduce the risk of premature death by 15 percent. The study confirms the recommendations of the National Dietary Guidelines that people consume more whole grains in their diet. The study examined data from the Nurses' Health Study and the Health Professionals Follow-Up Study. Researchers factored out the effects of age, body composition, physical activity and overall diet. The study examined data and death rates that occurred over a 25-year period. (JAMA Internal Medicine, published online January 6, 2015)



Applying Scientific Principles to a Natural Bodybuilder

CONTEST PREPARATIONS OFTEN INVOLVE DEHYDRATION, PROLONGED FASTING, SEVERE CALORIC RESTRICTIONS, HIGH-VOLUME CARDIO AND EXTENSIVE USE OF DIURETICS AND ANABOLIC STEROIDS. Scott Robinson and colleagues from Guru Performance in London, and other researchers, reported the results of contest preparation of a 21-year-old amateur bodybuilding athlete preparing for a natural bodybuilding contest. His plan involves consuming a variety of foods (including macronutrients), regular but not excessive exercise and incorporating rest days into his conditioning program. He lost nearly 26 pounds, including 15 pounds of fat and 11 pounds of lean mass. His resting metabolic rate decreased by 100 calories per day, while his resting fat oxidation increased by 33 percent. Muscle strength increased slightly. The authors concluded that a structured and scientific nutrition program could maximize health and performance in natural bodybuilders. (Journal International Society Sports Nutrition, 12:20, 2015)

Whey Protein Supplements Decrease Abdominal Fat

WHEY PROTEIN SUPPLEMENTS CONSUMED WITH WHOLE MILK SUPPRESSES THE TYPICAL INCREASE IN BLOOD FATS THAT OCCURS FOLLOWING CONSUMPTION OF A HIGH-FAT MEAL— ACCORDING TO A STUDY LED BY METTE BOHL FROM AARHUS UNIVERSITY HOSPITAL IN DENMARK, AND CO-WORKERS. They measured the blood fat response to a high-fat meal accompanied by supplements of either whey or casein protein. The researchers concluded that consuming whey protein with major meals could have a positive affect on cardiovascular disease risk factors. Drinking a whey protein shake with your lunch or dinner meals could keep belly fat under control. (American Journal of Clinical Nutrition, 101: 870-878, 2015)



Vitamin D Supplements Do Not Increase Testosterone

SEVERAL RECENT STUDIES HAVE LINKED LOW VITAMIN D LEVELS TO POOR BONE HEALTH, MUSCLE WEAKNESS, DEFICIENCIES IN REPRODUCTIVE HORMONES, LOW AEROBIC CAPACITY AND INCREASED BODY MASS INDEX (THE PROPORTION OF WEIGHT TO HEIGHT). Vitamin D supplements do not increase testosterone levels— according to a study from the VU University Medical Center in Amsterdam, the Netherlands. Vitamin D is synthesized in the body in a reaction involving sunlight. It can also be consumed in the diet by eating fatty fish, mushrooms and supplements. Some studies show that vitamin D enhances strength, power, and fat-loss. Vitamin D is also important for optimum health. (Clinical Endocrinology, published online January 2, 2015)

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Magnesium Supplements Reduce Blood Pressure

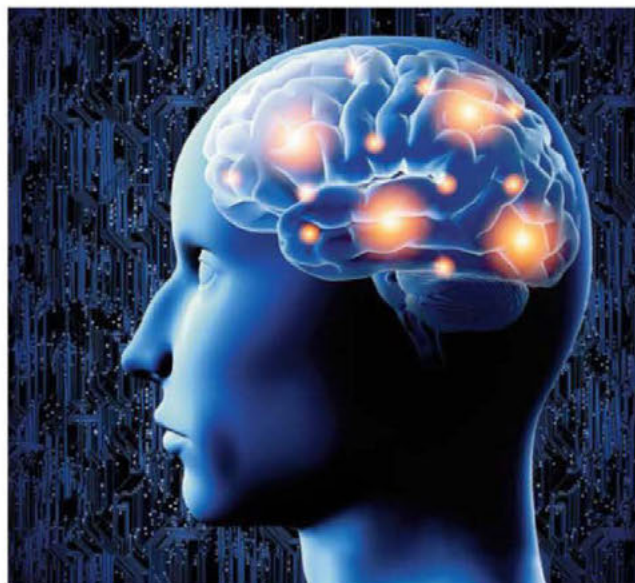
HYPERTENSION (HIGH BLOOD PRESSURE) IS LINKED TO CORONARY ARTERY DISEASE AND KIDNEY FAILURE. Major risk factors include smoking, physical inactivity and high salt intake. Inadequate intake of magnesium may be a factor because of the mineral's effect in reducing stress on the heart muscle. British researchers found that short-term administration of 300 milligram per day was linked to a three to four millimeters of mercury decreases in systolic and diastolic blood pressure (higher and lower blood pressure numbers) following intense exercise. While this is a small effect, it could have a significant impact on public health. (*Journal International Society Sports Nutrition* 12:19, 2015)

Glucosamine and Chondroitin Supplements Prevent Knee Cartilage Loss

GLUCOSAMINE AND CHONDROITIN SULPHATE SUPPLEMENTS REDUCED KNEE CARTILAGE LOSS IN SOME PATIENTS— ACCORDING TO A STUDY BY CANADIAN RESEARCHERS. Cartilage loss is linked to knee arthritis and eventual joint replacement. This study is at odds with a study led by Kent Kwok from the University of Pittsburgh, which found that people with mild to moderate knee pain did not benefit from taking glucosamine (1,500 milligrams per day) for six months. Several research studies found that glucosamine and chondroitin supplements promote the growth of cartilage cells. Cartilage is vital for functional, pain-free joints. Worldwide, people spent nearly \$2 billion per year on glucosamine-chondroitin supplements. They have a strong placebo effect— people want them to work, so they do. The best way to reduce arthritis pain is to exercise sensibly and maintain an ideal weight. We need more information before we can recommend these supplements. (*Annals of the Rheumatic Diseases*, 74: 547, 2015)

TYROSINE BOOSTS BRAIN POWER

THE BRAIN AND CENTRAL NERVOUS SYSTEMS ARE THE ULTIMATE LIMITING FACTORS OF PERFORMANCE. The brain is the body's conductor that orchestrates movement, metabolic control and feelings of well-being. Tyrosine is an amino acid used by the brain to produce the neurotransmitters dopamine and norepinephrine, which are vital for controlling movements and optimizing energy levels. A review of literature by Dutch scientists concluded that tyrosine supplements improve brain function after a single dose. Long-term supplementation improved memory and information processing. Tyrosine works by preventing depletion of vital brain neurotransmitters related to central nervous system fatigue. (*Pharmacology Biochemistry and Behavior*, 133: 1-6, 2015)



Beta-Alanine Supplements Increase Performance During Repeated Plyometrics

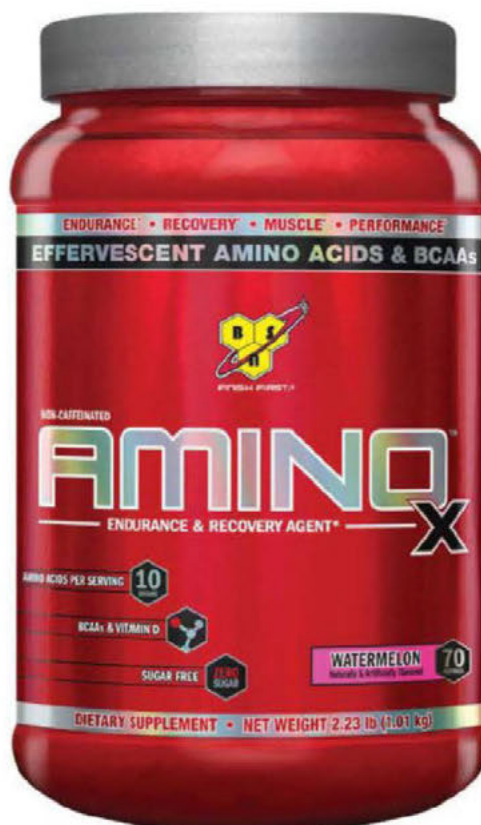
FATIGUE DURING HIGH-INTENSITY EXERCISE IS LINKED TO ACID BUILDUP THAT INTERFERES WITH CHEMICAL REACTIONS NECESSARY TO CONTINUE EXERCISE. Blood and muscles contain chemicals that buffer acids and prevent fatigue. Bicarbonate and alanine are two important buffers. Alanine is an amino acid that provides energy during exercise and prevents neuromuscular fatigue by increasing tissue carnosine levels. Carnosine is an important antioxidant that protects cells from destruction and buffers acids that cause fatigue. Alanine also helps supply energy during exercise. It is converted to blood sugar in the liver by a process called the glucose-alanine cycle. While alanine is not used to synthesize muscle tissue or enzymes, it influences exercise capacity— particularly endurance performance. A study from Belgium found that supplementing beta-alanine (4.0 to 5.6 grams per day) for eight weeks improved performance of repeated squat jumps and counter-movement jumps by six to eight percent, compared to a placebo (fake alanine). Beta-alanine caused a small improvement in repeated explosive power plyometrics. (*Amino Acids*, published online April 18, 2015)





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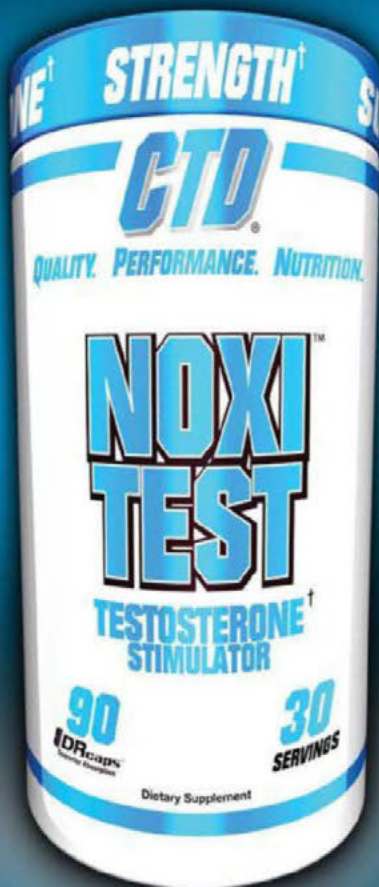
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SUPPLEMENT CUTTING-EDGE RESEARCH

Omega-3 Fatty Acids Fight Prostate Cancer

A 2013 STUDY LED BY ALAN KRYSTAL PUBLISHED IN THE JOURNAL OF THE NATIONAL CANCER INSTITUTE FOUND THAT HIGH BLOOD LEVELS OF OMEGA-3 FATTY ACIDS INCREASED THE RISK OF PROSTATE CANCER BY 71 PERCENT. Naturally, this study caused controversy in the supplement industry. A new study led by Kathryn Meier found just the opposite—the omega-3s EPA and DHA prevented prostate cancer cell growth. The study examined the effects of omega-3 fatty acids on cultures of prostate cancer cells grown in the laboratory. We do not know if these results apply to naturally living humans. (Journal of Pharmacology And Experimental Therapeutics, 352: 380-394, 2015)



Protein Requirements for Active People

PROTEIN IS VITAL FOR BUILDING AND REPAIRING ACTIVE TISSUES. Protein requirements range from 0.8 and 1.6 grams per kilogram of bodyweight per day. A literature review led by Trisha McLain and colleagues from the University of New Mexico concluded that active athletes need protein that is easy to digest and rich in essential amino acids (can't be synthesized by the body). Protein sources include meat, dairy foods and vegetables. Strive to consume 20 to 25 grams of protein per meal, containing eight to 12 grams of essential amino acids. Protein volume, composition and type are essential factors for optimizing protein metabolism. (Strength and Conditioning Journal 37: 61-70, 2015)



Build Strength in Your Sleep

CONSUMING 27.5 GRAMS OF PROTEIN BEFORE BED RESULTS IN LARGE INCREASES IN MUSCLE STRENGTH COMPARED TO A PLACEBO (FAKE PROTEIN). Researchers from Maastricht University in the Netherlands studied young men participating in a 12-week weight-training program who received protein supplements nightly before bed. The protein supplement group made substantial changes in muscle strength and increased the size of fast- and slow-twitch muscle fibers. Consuming a protein shake before bed is a simple and effective way to boost muscle mass and strength in people participating in a weight-training program. (The Journal of Nutrition, published online April 29, 2015)

Green Tea Extract Linked to Liver Toxicity

GREEN TEA EXTRACT IS AN EXTREMELY POPULAR SUPPLEMENT THAT PEOPLE TAKE TO PROMOTE WEIGHT LOSS AND INCREASE ENERGY LEVELS. A study led by Herbert Bonkovsky from Wake Forest University School of Medicine reported that a chemical called epigallocatechin gallate (EGCG) is toxic to the liver

when taken in high doses. They reported that at least 20 cases of liver injury have stemmed from green tea extract supplements. They stated, however, that these findings do not apply to consumption of green tea because the EGCG levels do not approach those found in green tea extract supplements. We are in the dark about the dangers of herbal products such as green tea extract. While people from China have consumed green tea for centuries, it is only recently that we have been able to concentrate key ingredients in herbal products. (NeutraingredientsUSA.com, May 12, 2015)



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Drug Company Creates a Need for Product and Then Markets It

ADVERTISING EXPERTS KNOW THAT THE MOST SUCCESSFUL PRODUCTS ARE THOSE THAT PEOPLE THINK ARE ESSENTIAL. The drug company Shire is conducting a masterful ad campaign for its binge-eating drug Vyvanse. Their strategy was to educate people regarding the existence of the disease first and then sell them the drug. They employed former professional tennis player Monica Seles to describe her battles with binge eating. She appeared on television shows such as "Good Morning America" and "The Dr. Oz Show." Shire used the same strategy to market Adderall to treat attention deficit hyperactivity disorder (ADHD). They hyped the disorder and then made billions of dollars marketing the drug. Vyvanse is an amphetamine-like drug with a huge potential for abuse, and Shire has been widely criticized for its advertising tactics. (The New York Times, February 24, 2015)

Low Doses of Clenbuterol Cuts Fat in Horses

CLENBUTEROL IS USED TO TREAT ASTHMA AND IS VERY POPULAR WITH BODYBUILDERS BECAUSE IT INCREASES MUSCLE GROWTH

AND CUTS FAT. It is a beta2-agonist, which means that it has effects similar to the fight-or-flight hormone adrenaline. It is a popular drug with bodybuilders because it builds muscle, cuts fat and boosts energy levels. It builds muscle by promoting specific signaling pathways inside the cells that activate protein synthesis and modifies muscle protein breakdown, remodeling and repair. It decreases body fat by binding with the adrenaline receptors in fat cells, which promotes fat breakdown and release. A study from the School of Veterinary Medicine at the University of Pennsylvania found that horses given low doses of clenbuterol for 21 days showed a 21 percent decrease in percent body fat without losing any weight. Clenbuterol can have negative side effects on the heart and blood vessels. (American Journal Veterinary Research, 76:460-466, 2015)



Heart Attack and Stroke Risks Greater From Testosterone Injections Than from Patches and Gels

THE SAFETY AND EFFECTIVENESS OF TESTOSTERONE SUPPLEMENTS HAS BEEN CONTROVERSIAL SINCE THEIR DEVELOPMENT IN THE 1930S. Several recent studies found an increased risk of heart attack and stroke in men receiving testosterone, but these studies have been severely criticized by most hormone specialists. Television ads warning of the dangers of "low T" has tripled the number of prescriptions written for testosterone in the last 10 years. Nearly four percent of United States men over 60 take testosterone in the form of injections, gels and patches. A study led by J. Bradley Layton from the University of North Carolina at Chapel Hill found that testosterone injections resulted in a greater incidence of heart attack, stroke, chest pains, hospitalization and death than patches and gels. (JAMA Internal Medicine, published online May 11, 2015)

Steroids Harm Sexual Function

ANABOLIC STEROIDS CAN HAVE LONG-TERM AND SOMETIMES PERMANENT EFFECTS ON SEXUAL FUNCTION IN MEN AND WOMEN.

Roughly 6.4 percent of men and 1.6 percent of women have used anabolic steroids sometime in their lives. Most have obtained the drugs on the Internet or other unlicensed sources and take them in high doses, often in combination with other drugs. A literature review by researchers from Germany and Saudi Arabia concluded that steroids interfere with sex hormone control in the body and trigger low sperm counts, testicular atrophy, infertility and erectile dysfunction. They are also linked to acne and gynecomastia—the development of female-like breast tissue. In women, steroids lead to menstrual irregularity, contribute to the female athlete triad (low energy intake, menstrual irregularity and low bone mass) and clitoral and abnormal hair growth. The authors concluded that drug-testing programs administered by the World Anti-Doping agency protect athletes from the medical side effects of anabolic steroids. (European Journal Endocrinology, published online March 24, 2015)



Anabolic Steroid Users Take a Variety of Drugs

PEOPLE WHO TAKE ANABOLIC STEROIDS ALSO USE OTHER DRUGS AT THE SAME TIME.

Norwegian researchers conducted a meta-analysis that combined the results of 50 studies. Substances also consumed by steroid users included marijuana, cocaine, growth hormone, human chorionic gonadotropin (hCG), amphetamine, clenbuterol, ephedra, insulin and thyroxine. Steroid users took additional drugs to enhance the effects of steroids, combat steroid side effects, and for recreation and relaxation and sexual enhancement. The study concluded that steroid users were more likely to abuse many substances concurrently. (Substance Abuse Treatment, Prevention, and Policy, 10:12, 2015)



Thiazide Diuretics Are Excellent Drugs for Treating High Blood Pressure

HYPERTENSION (HIGH BLOOD PRESSURE) HAS BEEN CALLED THE SILENT KILLER BECAUSE IT OFTEN HAS NO SYMPTOMS AND IS A LEADING CAUSE OF HEART ATTACK, STROKE, KIDNEY DISEASE AND ERECTILE DYSFUNCTION. Fortunately, the incidence of hypertension has declined steadily since the late 1950s. In 1958, scientists developed thiazide diuretics, which lowered blood pressure. Chinese researchers, in a meta-analysis using more than 112,000 patients, concluded that thiazide diuretics reduced the risk of heart attack, heart failure and stroke. Thiazide diuretics are safe, effective, well tolerated and inexpensive, and should be a front-line treatment for high blood pressure. These drugs have met the test of time, but they are on the banned substances list for athletes because they are used to mask other prohibited drugs. (American Journal Hypertension, published online April 29, 2015)

Compounding Pharmacies Often Produce Inconsistent Products

MANY PEOPLE OBTAIN TESTOSTERONE CREAMS AND GELS FROM COMPOUNDING PHARMACIES THAT MAKE DRUGS TO ORDER FROM PHYSICIAN PRESCRIPTIONS. A study led by Ethan Grober from the Division of Urology at the University of Toronto found that compounded testosterone products were highly variable, which could compromise their effectiveness and safety. Most of these products contained at least 20 percent more testosterone than indicated, but some products contained no testosterone. In contrast, analysis of products such as AndroGel and Testim were consistent and accurate. (Journal Sexual Medicine, published online May 12, 2015)

Sodium Restriction Might Help Treat Sleep Apnea

OBSTRUCTIVE SLEEP APNEA IS CAUSED BY AIRWAY COLLAPSE DURING SLEEP, WHICH DECREASES BLOOD OXYGEN LEVELS. Sleep disturbances increase the risk of type 2 diabetes and the metabolic syndrome—a collection of symptoms that include high blood pressure, abdominal fat deposition, abnormal blood fats and insulin resistance. Sleep disturbances interfere with signaling pathways that regulate blood sugar. Obstructive sleep apnea is particularly common in bodybuilders because of their large necks, which increase the risk of airway collapse. High salt intake could contribute to the severity of sleep apnea by increasing fluid retention and promoting airway collapse. Restricting salt intake or taking diuretics might be a treatment for sleep apnea. (Trials, 16:188, 2015)



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CAFFEINE, FOUND IN COFFEE, CHOCOLATE, TEA AND SUPPLEMENTS, INCREASES STRENGTH, POWER AND ENDURANCE. It might also improve sexual performance. David Lopez from the University of Texas-Houston School of Public Health, and co-workers, found that men who consumed the most caffeine showed the lowest risk of erectile dysfunction. The researchers examined more than 3,700 men who participated in the National Health and Nutrition Examination Survey (NHANES). The data was obtained from 24-hour dietary recall and was consistent among lean and obese men. However, the relationship did not exist in men with type 2 diabetes. Caffeine might improve athletic and sexual performance. (PLoS ONE, 10(4): E0123547, 2015)



LOW FREE TESTOSTERONE

Linked to Erectile Dysfunction In Young Men

A FOUR-YEAR STUDY BY RESEARCHERS FROM GUANGXI MEDICAL UNIVERSITY IN CHINA OF MORE THAN 700 YOUNG MEN AGED 21 TO 40 FOUND THAT THOSE WITH THE LOWEST LEVELS OF FREE TESTOSTERONE AND HIGH LEVELS OF SEX HORMONE-BINDING GLOBULIN HAD THE HIGHEST RISK OF ERECTILE DYSFUNCTION (ED). ED is an early predictor of heart attack, and an important marker of poor metabolic health. The relationship between poor sex hormone metabolism and ED persisted during the entire four-year period of the study. It is controversial whether supplying testosterone supplements will enhance sexual performance. (Journal Sexual Medicine, published online May 14, 2015)

NO LINK BETWEEN PORNOGRAPHY AND SEX PROBLEMS IN YOUNG MEN

ERECTILE DYSFUNCTION IS AN EPIDEMIC IN MEN UNDER 40. IS EASY ACCESS TO PORNOGRAPHY ON THE INTERNET THE CAUSE? Live porno webcams and videos bring porno on demand to computers, tablets and smartphones. Researchers from the University of Zagreb in Croatia found no relationship between pornography use and sexual desire, erectile function or the capacity for orgasms in a sample of men living in Croatia, Norway and Portugal. Factors such as physical inactivity and insulin resistance may account for the surge in erectile dysfunction in young men. (Journal of Sexual Medicine, 12: 1136-1139, 2015)



MISSIONARY POSITION

Places Least Stress on the Spine in Women

SEX IS AN ENJOYABLE AND ESSENTIAL PART OF A HEALTHY LIFESTYLE, BUT A SORE BACK TAKES THE FUN OUT OF IT. Eighty-five percent of men and women will have back pain at some point in their lives. Back expert Stuart McGill from McMaster University in Canada, and co-workers, found that doggy-style sex was the least stressful to the male spine, while the missionary position was least stressful to the female spine. The researchers measured spinal biomechanics during sex using two missionary positions, spooning and two forms of doggy style. Doggy style with the woman's arms outstretched put the male spine in an upright, neutral position, which placed the least stress on spinal nerves and disks. As a compromise, doggy-style sex with weight supported on the forearms was best for minimizing spinal stress in men and women. (European Spine Journal, 24: 513-520, 2015; Spine 39:1633-1639, 2014)



Shockwave Treatment Might Be Effective for Erectile Dysfunction

POOR BLOOD FLOW IN THE PENIS IS AN IMPORTANT CAUSE OF ERECTILE DYSFUNCTION (ED). Low-intensity shock waves have been shown to produce new blood vessels and might be effective for treating men with ED. A study led by researchers from the Men's Health Clinic in Amsterdam, the Netherlands found that shockwave therapy improved erectile function during six months of treatment. Eighty-one percent of the patients showed improved sexual function. Aerobic exercise improves erectile function better than drugs like Viagra. Also exercise improves metabolic health and reduces the risk of cardiovascular disease and premature death. Exercise is probably a better choice than shockwave treatment for ED. (International Journal Impotence Research, 27: 108-112, 2014)



Regular, Intense Exercise *Reduces the Risk of Erectile Dysfunction*

ERECTILE DYSFUNCTION (ED) IS AN EARLY WARNING SIGN OF HEART ATTACK. POOR BLOOD VESSEL HEALTH IMPAIRS THE ABILITY TO SECRETE A CHEMICAL CALLED NITRIC OXIDE, WHICH CONTROLS BLOOD FLOW TO THE PENIS. Regular physical activity is the most important way to promote metabolic health and healthy sexual function. A study led by Adriana Vidal from Cedars-Sinai Medical Center in Los Angeles found that men who exercised intensely have a lower incidence of erectile dysfunction. Intense exercise was defined as greater than or equal to 18 met hours per week, the equivalent of walking 60 minutes, six times per week or jogging 30 minutes, five times per week. These results were consistent in white and black men. (Journal of Sexual Medicine, 12: 1202-1210, 2015)

DPP-4 Inhibitors Might Help Treat Erectile Dysfunction

DRUGS CALLED PHOSPHODIESTERASE-5 INHIBITORS, SUCH AS VIAGRA, CIALIS AND LEVITRA, PROMOTE ERECTIONS BY DELAYING THE BREAKDOWN OF NITRIC OXIDE, WHICH IS A CHEMICAL SECRETED BY THE INNER LINING OF THE ARTERIES THAT PROMOTES BLOOD FLOW. Croatian researchers speculated that enhancing the health of endothelial cells (the cells lining the arteries) using drugs called DPP-4 might be a more effective way to treat erectile dysfunction. DPP-4 is a drug used to treat people with diabetes that rejuvenates the cells lining the blood vessels. It is safe and might be more effective than existing treatments. (Medical Hypotheses, published online April 18, 2015)

PREMATURE EJACULATION Exposed

PREMATURE EJACULATION (PE) IS THE MOST SIGNIFICANT SEXUAL PROBLEM IN MEN. It occurs in people of all ages, races and educational levels, but is most prevalent in men aged 18 to 40. The problem is more serious in men who are divorced, separated or widowed than in men who are married or who never married. College graduates are 35 percent less likely to suffer from PE than high school dropouts, and Hispanics are less likely to have the problem than whites, blacks or Asians. Risk factors include past history of sexually transmitted diseases or urinary tract infections, poor health, emotional stress, loss of income, past history of same-sex activity, history of sexual harassment and childhood abuse. Factors decreasing the risk include daily alcohol consumption, circumcision and greater sexual experience. Men with strict religious backgrounds who view sex as a sin or lack attraction for their partner also have an increased risk of PE. Physical factors can play a role. These include abnormalities in the pelvic floor muscles, hypersensitivity of the head of the penis, overstimulation of the genitals from the brain, side effects of drug use (amphetamine, cocaine), urological diseases and neurological diseases (multiple sclerosis, peripheral nerve disease). Treatment for PE is difficult because of the complexity of the problem. (Journal of Sexual Medicine, 12: 1175-1183, 2015)



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There is the easy and basic—protein is an essential macronutrient component of the diet, consisting of amino acids. You eat too little protein, and your body robs your skeletal muscle to provide essential amino acids and ketones to support vital organs (e.g., heart, brain and liver).¹ People following hypocaloric diets (eating fewer calories than they burn to lose weight) are better able to adhere to their diet plan, satisfy their hunger more quickly and maintain their basal metabolic rate (i.e., energy expenditure or how many calories you burn at rest) as well as lean mass (e.g., muscle) IF they consume a greater amount of protein.²

Great! For the kind of person who doesn't read the instructions before putting together something more complicated than a peanut butter and jelly sandwich, this is enough information. Yet, the public still struggles with weight loss. Dieting often becomes intolerable as primitive pathways are activated, leading to foraging and unplanned feeding behavior. Extremes in dieting and fat loss can lead to eating disorders that might reflect physiologic need rather than a psychological pathology.³ It is not uncommon for wrestlers to fail to “make weight,” or bodybuilders to fail to achieve a shredded appearance onstage because they couldn't control binge eating.⁴

For the typical person, meaning not an athlete or bodybuilder, increasing the intake of dietary protein can improve both adherence (i.e., sticking to a diet plan) and efficacy (i.e., how well it works) through the routes mentioned above.⁵ Traditionally, dieters followed low-fat plans that provided the majority of calories from carbohydrates. The relatively low percentage (~15%) and total amount of protein consumed daily (~60-70

grams) may be sensed by the body as a crisis state, and pathways in the brain are turned on or off—resulting in cravings, hunger and difficulty reaching satiation (fullness) after a meal. This leads to increased food seeking, and often the selection of protein-rich foods—of course, these often have high fat content as well. As always, this is more easily seen in rats, as they don't have a freezer full of Ben & Jerry's ice cream or a drive-through Dunkin' Donuts nearby.

Bodybuilders and athletes generally con-

The public still struggles with weight loss. Dieting often becomes intolerable as primitive pathways are activated, leading to foraging and unplanned feeding behavior.

sume sufficient, even excess protein, in the non-stressed state. Based upon consultation requests from trainers and coaching staff, female athletes and those in weight-restricted sports appear to be more vulnerable to drastic weight-loss diets or unsound advice.^{3,4} For the bodybuilder, the pre-contest period is a particularly trying time, as every unnecessary calorie is stripped from the diet to maximize fat loss and prevent water retention. Additional training, posing and cardio increase the physical stress; additionally, sleep disruption as well as contest-related anxiety can further promote a negative metabolic and mental state. So, what would usually be enough is, well, not enough.

PROTEIN QUALITY MATTERS

It is not just a matter of protein quantity, but it's the quality of protein that matters. Most readers are familiar with whey protein, as it has shown itself to be the king of (single-source) protein when it comes to building muscle. The reason whey is so highly regarded lies in its amino acid profile. Whey is very high in the branched-chain amino acids (BCAAs) leucine, isoleucine and valine. These three BCAAs comprise a very high percentage of contractile protein in muscle. In other words, the stuff in muscle that lets you push and pull. Just like a rope-tugging chew toy that your dog plays with, the actin and myosin chains that form contractile proteins “wear and fray” with exercise. Eventually, they would break, but the body has repair mechanisms that allow for damaged actin and myosin chains to be restored and even strengthened—the goal of weight training, if there are sufficient building blocks (amino acids) available for repairing and hypertrophy. Unused, muscles atrophy as the body seeks to rid itself of the unnecessary metabolic burden of dormant tissue, redistributing the essential nutrients elsewhere.

Though much of the attention on amino acids focuses on BCAAs, and especially leucine (for good reason), that does not dilute the need for the remaining “essential amino acids” (EAAs). There are nine amino acids that the body is unable to create; the 12 non-essential amino acids can be formed in the body using other amino acids as the contributing backbone, changing side chains on the molecule to create other amino acids needed to produce the multitude of proteins in the body. The other six EAAs (besides leucine, isoleucine and valine) are histidine, lysine, methionine, phenylalanine,

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threonine and tryptophan.

Whey is less effective at providing sufficient amounts of other EAAs, particularly phenylalanine and tryptophan. In part, this is due to the relatively low concentration of these two amino acids in whey. However, another factor that needs to be considered is that the rapid influx of BCAAs compete with phenylalanine and tryptophan at the level of specific transporters that carry this class of amino acids (large neutral amino acids, or LNAAs) from the gut to the circulation, and from the circulation into tissues such as muscle or the brain. It has been shown in animal studies that consuming a protein with a high concentration of BCAAs lowers the amount of tryptophan that enters the brain's circulation, reducing the production of serotonin (a neurotransmitter).⁶

There is a need for other proteins, particularly those high in histidine and tryptophan, even for those who supplement the diet with copious amounts of whey protein. In fact, there is no single perfect protein, as many factors determine the value of each protein. Slowly digested proteins, such as casein, may offer advantages prior to periods of fasting (e.g., overnight sleep) or prior to prolonged exercise; fish protein is high in taurine and glycine, and appears to support weight loss and fat burning; egg protein is high in methionine and phenylalanine, and has a strong appetite-suppressing effect.^{7,8}

So, it should come as little surprise that the body not only monitors the quantity of protein in the diet, but also the quality—how well it provides all EAAs. In fact, rodent studies show these animals will avoid food pellets created to be deficient in one or more essential amino acids, selecting instead otherwise identical pellets that are complete in their amino acid profile.⁹ If a poor-quality protein is all that is available, overeating occurs to compensate for the deficient amino acid until the body's needs are met. This may result in extreme overeating and pathologic weight gain. It is not dissimilar from a condition known as pica, which occurs in populations where the food is iron deficient. Natives to these areas will resort to eating dirt, as the body drives for more food to meet the needs of that one micronutrient (iron).¹⁰ Pica can also be a manifestation of a psycho-

logical disorder, and has responded to serotonin reuptake inhibitors, suggesting a potential role in tryptophan uptake or metabolism.¹¹

HOW THE BODY MONITORS PROTEIN INTAKE

To allay any concerns about “dirt binging” if whey protein is back-ordered, the human body is remarkably resilient when it comes to protein intake. In fact, it takes some time for a deficiency state to manifest relative to amino acids, due to a huge storage pool called skeletal muscle. However, as you may deduce, if the body needs to rob the muscle for amino acids, it is doing so by catabolizing the very same muscle that required months to years of dedicated training to build to its current state. Therefore, it is worthwhile giving some thought to what proteins are consumed throughout the day, to avoid some whey-dependent imbalance.

So, how does the body monitor protein quantity and quality intake? An excellent review recently addressed these points.¹² Three different pathways are considered viable possibilities: amino acids interact directly with receptors in the brain; the “gut” (i.e., intestines and liver) senses amino acids and generates neural signals and hormonal messengers; and/or a nutrient-specific hormone is released.¹² One or all of these pathways may affect behavior/metabolism/appetite in a manner that supports weight loss/fat loss.

In the brain, there is an enzyme that is turned on when either a non-specific amino acid deficiency is sensed (any of the essential amino acids), called GCN2; or another that is specific to leucine, that directly suppresses the appetite by altering the balance of two competing pathways in cellular metabolism (mTOR vs. AMPK).^{13,14} The leucine effects are not duplicated by other amino acids, suggesting this amino acid (high in whey) is uniquely viewed as a signal of the nutritional environment. Thus, dairy-based proteins used in weight-control shakes can be practical tools for the consumer seeking to lose weight and avoid later hunger or binge eating.

The brain does indeed regulate most behavior, but the “sensing” is often done peripherally, meaning in other tissues. It has been shown that a low leucine or BCAA diet does not induce

hyperphagia (overeating), and that directly infusing (injecting) amino acids did not block the overeating effect induced by a low-protein diet. This strongly suggests that something senses the quantity and quality of protein as it is being consumed, affecting feeding behavior more strongly than what the brain senses from its blood supply.¹⁴ Further, supplementing BCAA in protein-deficient rat chow did not keep rats from selecting a lower BCAA chow that had adequate and complete protein.¹⁵

There are taste receptors on the tongue that detect amino acids; additionally the intestines, as well as the liver, produce vagal signals that generate a distinct pattern in the brain in areas involved with appetite.¹⁶⁻¹⁸ Further, hormones generated during digestion also impact feeding to signal satiation (fullness).¹⁹

STIMULATING THE “BROWNING” OF WHITE FAT

The final pathway is exciting due to its novelty and potential. FGF21 (aka fibroblast growth factor 21) is a metabolic hormone that has been shown to reduce blood sugar, improve the lipid profile (i.e., cholesterol) and increase thermogenesis.²⁰ Drugs are being developed for treatment of certain metabolic disorders commonly seen, such as obesity. One aspect of FGF21 that is exciting to researchers is its ability to stimulate the “browning” of white fat, which increases calorie burning and wasting of fatty acids as heat, instead of storing the excess calories as adipose (fat). This occurs via processes involving adrenergic stimulation and PGC-1alpha, a messenger that has been implicated in improving metabolic health in muscle and fat cells.^{21,22} Unfortunately, there is still much to learn about FGF21, as it is elevated in obesity and type 2 diabetes, suggesting that chronically elevated concentrations lead to either a state of resistance or activation pathologic pathways.^{20,23}

It is likely that the pulsatile spikes in FGF21 produce its metabolic benefits, and there is evidence showing that depriving the diet of single amino acids (leucine, histidine, asparagine and methionine) causes the liver to produce FGF21 via the GCN2 pathway, the same pathway that controls feeding in the brain when diets are deficient

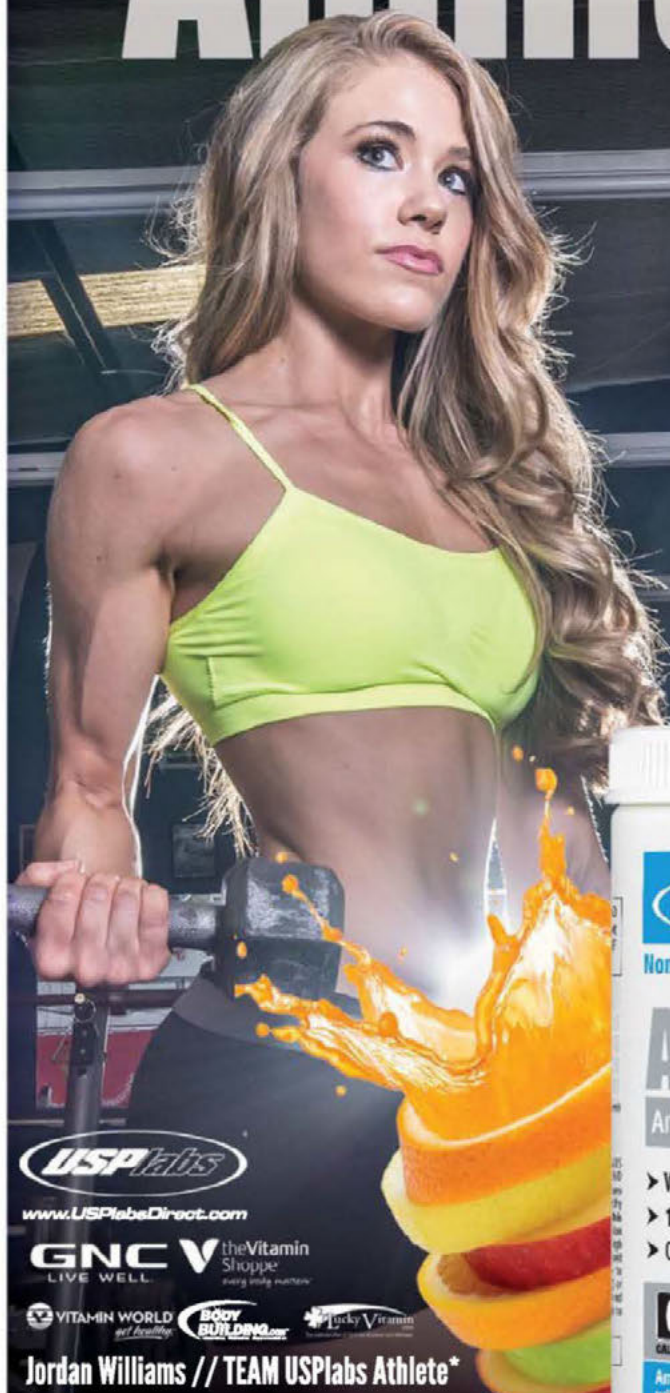
If the body needs to rob the muscle for amino acids, it is doing so by catabolizing the very same muscle that required months to years of dedicated training to build to its current state.



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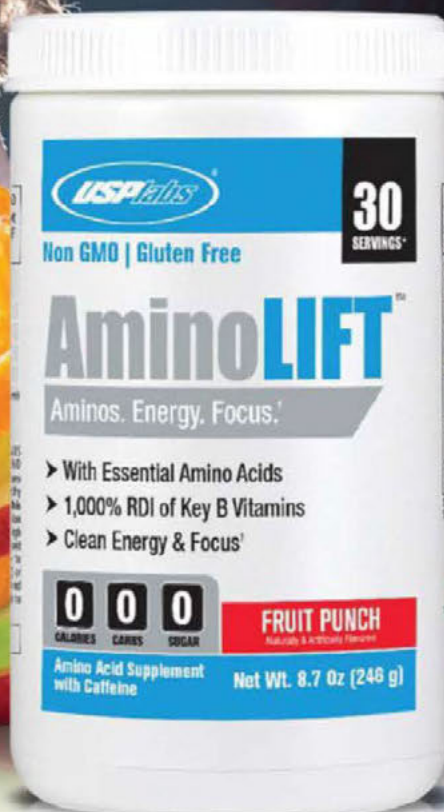
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FAT attack

in EAAs.¹² Further, it has been shown that restricting dietary protein in rats AND HUMANS!!! produces a sharp increase in FGF21.²⁴ The rats demonstrated increased hunger and energy expenditure. This effect was not seen when a protein-sufficient hypocaloric diet was given, demonstrating a specific effect for inadequate dietary protein.

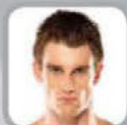
Though hypothetical at this point, muscle hypertrophy and repair may also induce increases in FGF21. Recall that muscle serves as a storage pool for amino acids. If training and hormones combine to induce a state of ongoing hypertrophy and muscle protein synthesis, then muscle-based amino acid availability to the circulation (bloodstream) may decrease. When muscle is being driven to grow, it “hogs” the amino acids that would hold off triggering FGF21. The reduction in the amino acid alanine may mimic the effects seen in rodents who have reduced muscle catabolism due to a lack of corticoid receptors (stress hormone).²⁵ Alanine and glutamine are the two most prevalent free-form amino acids in skeletal muscle, and leucine catabolism has been proposed to maintain alanine concentration. In plain English, if the muscle doesn't let go of alanine during fasting periods, the liver might pump out FGF21 as if it were in a protein-deficient state. This has been shown to increase the breakdown of stored fat in the liver and fat cells.

This leaves us at a difficult point. Some suggest that feeding a protein-deficient diet may be beneficial to weight loss, as it stimulates the production of FGF21, with its metabolic advantages.²⁶ However, it has already been shown that higher protein intake is associated with more efficient weight loss, with greater specificity toward fat loss. Also, protein-deficient diets, particularly those low in EAAs, increase appetite along with increasing calorie burning. Appetite control is one of the biggest hurdles for most individuals seeking to lose weight, and increasing dietary protein has been shown to improve appetite control.

In all likelihood, FGF21-based drugs will be developed. Though the FGF21 pathway shows great promise, there is much that remains to be learned before any firm recommendations can be offered. ■

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BCAA SUPPLEMENTS: FACT AND FICTION— SETTING THE RECORD STRAIGHT!

The branched-chain amino acid (BCAA) is an amino acid with a side-chain consisting of covalently linked carbon atoms that form a branch-like structure, thus eliciting their name. There are the three BCAAs found in the body: leucine, isoleucine and valine. Supplementation with BCAAs has been very popular, primarily because of the apparent ability of BCAAs to increase muscle growth. The problem is that all three BCAAs do not equally promote muscle growth. In fact, it's not even close as leucine is, by far, the most potent stimulator of muscle growth, while isoleucine and valine come in a very distant second and third place, respectively.¹² That said, isoleucine and valine do provide some performance-enhancing effects. However, the simultaneous consumption of all three BCAAs should be avoided, as many of the performance-enhancing effects caused from the independent ingestion of a particular BCAA can be diminished by the simultaneous ingestion of all three BCAAs. Furthermore, the counterproductive influence caused by taking all three BCAAs at the same time likely increases the amount of BCAA required to produce the desired performance-enhancing effect, and greater BCAA intake further depletes the positive influence from BCAA consumption—as too much BCAA intake promotes insulin resistance³, stunting muscle growth and thus performance.

LEUCINE: THE MOST POTENT MUSCLE-BUILDING BCAA

Out of all three BCAAs, leucine elicits the strongest anabolic response by potentially activating the nutrient-sensing enzyme mTOR, which directly enhances muscle protein synthesis while preventing muscle protein breakdown, resulting in muscle growth. Several scientific studies highlight potent mTOR activation by the amino acid leucine. One study by Walker et al.⁴ showed that leucine consumption shortly after working out increased mTOR activity, leading to greater post-workout muscle protein synthesis, compared to an exercised group that was not fed leucine. Another scientific inquiry by Pasiakos et al.⁵ demonstrated that consumption of leucine

immediately after exercise specifically enhanced muscle protein synthesis by as much as 33 percent.

Leucine consumption has also been shown to decrease muscle protein breakdown, once again by activating mTOR⁶, which has the capacity to turn off the energy-sensing enzyme AMPK. Inactivation of AMPK prevents its normal function of initiating the breakdown of protein into amino acids for energy, in order to restore energy levels within the cell when cellular energy is low. Altogether, the ability of leucine to robustly increase muscle protein production while decreasing protein degradation increases muscle protein levels, resulting in considerable muscle hypertrophy.

ANTAGONISTIC EFFECTS OF ISOLEUCINE AND LEUCINE

Despite the limited capacity of isoleucine to trigger muscle protein synthesis and therefore muscle growth relative to leucine¹², isoleucine outperforms leucine when it comes to supplying the muscle cell with energy from glucose. This occurs because isoleucine intake increases the influx of glucose into the muscle cell and increases the rate at which glucose is converted into energy within muscle.⁷ In contrast, leucine consumption only increases glucose influx into the muscle cell. After that, glucose is then converted into glycogen for energy storage, instead of being immediately burned for energy.⁸

The antagonistic effects of isoleucine and leucine on glucose metabolism within the muscle cell indicates that co-consumption of these two BCAAs is likely unproductive and should be avoided. On the other hand, the use of isoleucine and leucine at different times should generate superior performance enhancement—particularly if isoleucine use occurs before training to maximize energy production, and leucine use takes place post-workout to increase the anabolic response to training.

Furthermore, the ability of isoleucine to convert glucose into energy within the muscle cell plausibly contributes to the inhibitory effect that isoleucine has on insulin function, as higher energy levels from isoleucine consumption tend to

inactivate certain isoforms of the energy-sensing enzyme AMPK.⁹ Inactivation of AMPK lowers the capacity that AMPK has to augment the insulin-signaling pathway, resulting in a weaker overall insulin response that reduces the capacity to pack on muscle mass.

VALINE AND LEUCINE TOGETHER CAN PROMOTE SLUGGISHNESS AND FATIGUE

Although the BCAA valine doesn't effectively drive muscle growth¹², it can improve exercise performance by lowering production of the neurotransmitter serotonin during exercise by directly inhibiting transport of the serotonin-precursor tryptophan, resulting in a diminished conversion of tryptophan into serotonin.¹⁰ Since serotonin tends to bring about sluggishness and fatigue in the gym, the reduction in serotonin levels from valine intake enhances performance. So, it seems pretty simple—take a handful of BCAAs containing valine before your workout to lower serotonin levels and reduce fatigue, and you'll be good to go.

Well, unfortunately it's not that simple. As it turns out, greater fatigue from exercise is actually influenced more heavily by the ratio of serotonin to another neurotransmitter, dopamine¹¹, where higher serotonin to dopamine ratios increase fatigue. Thus, simply taking BCAAs isn't going to effectively reduce tiredness, because BCAAs do more than simply lower serotonin. In fact, the BCAA leucine also prevents the uptake of the dopamine-precursor tyrosine into the brain, ultimately reducing dopamine production.¹² Of course, this would counteract any positive effect that valine might have by reducing serotonin levels, as the simultaneous reduction in dopamine levels would reestablish a serotonin to dopamine ratio that promotes fatigue. So, once again, the antagonistic functions of BCAAs—in this case, valine and leucine—reveals that co-ingesting them is unproductive. BCAAs should be consumed separately, with valine intake before exercise to optimally hinder pre-workout fatigue—and leucine after training, to induce relaxation that promotes full recuperation.

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TOO MUCH BCAA INTAKE CAN REDUCE MUSCLE GROWTH

Insulin is one of the most potent muscle-building hormones in the human body, possessing the ability to drastically increase muscle protein synthesis and enhance muscle growth.¹³ Insulin achieves this muscle-building effect by binding to the insulin receptor and setting off a cascade of signaling events that eventually activates the enzyme mTOR, triggering muscle growth.¹⁴ Because of its potency, the insulin-signaling cascade is very sensitive to overstimulation, where extraneous activation of the insulin-signaling pathway rapidly triggers negative feedback mechanisms—ultimately resulting in diminished muscle growth.

Interestingly, several studies have shown that BCAAs can overstimulate the insulin-signaling machinery, resulting in reduced insulin signaling^{15,16} and ultimately insulin resistance.³ On the contrary, leucine consumption alone has been shown to actually rescue insulin-signaling deficiency¹⁷, despite the strong influence that leucine has on insulin secretion and signaling activity which, in theory, should have a propensity to decrease insulin function via the previously mentioned negative feedback mechanism that occurs with

too much insulin signaling. Although the exact mechanism by which leucine improves insulin function is not completely understood, it appears that leucine's strong influence on muscle growth generates a large demand for energy as muscle tissue is very active metabolically, thus requiring considerable energy. As a result, leucine intake also triggers the production of energy, primarily by burning fat.^{18,19} The loss of body fat augments the response to insulin signaling thus overcoming, to some degree, the negative influence that leucine can have on insulin signaling via overstimulation.

In summary, the optimal use of BCAAs for performance enhancement involves more than just simply consuming BCAAs before and after working out to boost muscle growth. The correct use requires the proper timing of leucine, isoleucine and valine intake to prevent their antagonistic effects on each other, thus maximizing the performance-enhancing effects of BCAA consumption. Moreover, the removal of any counteracting effects from proper timing of BCAA intake further enhances the muscle-building effect by lowering the effective dosage required for each BCAA, which reduces the negative impact that extraneous BCAA consumption can have on insulin-driven muscle growth. ■



The correct use requires the proper timing of leucine, isoleucine and valine intake to prevent their antagonistic effects on each other, thus maximizing the performance-enhancing effects of BCAA consumption.

For most of Michael Rudolph's career he has been engrossed in the exercise world as either an athlete (he played college football at Hofstra University), personal trainer or as a research scientist (he earned a B.Sc. in Exercise Science at Hofstra University and a Ph.D. in Biochemistry and Molecular Biology from Stony Brook University). After earning his Ph.D., Michael investigated the molecular biology of exercise as a fellow at Harvard Medical School and Columbia University for over eight years. That research contributed seminally to understanding the function of the incredibly important cellular energy sensor AMPK—leading to numerous publications in peer-reviewed journals including the journal *Nature*. Michael is currently a scientist working at the New York Structural Biology Center doing contract work for the Department of Defense on a project involving national security.

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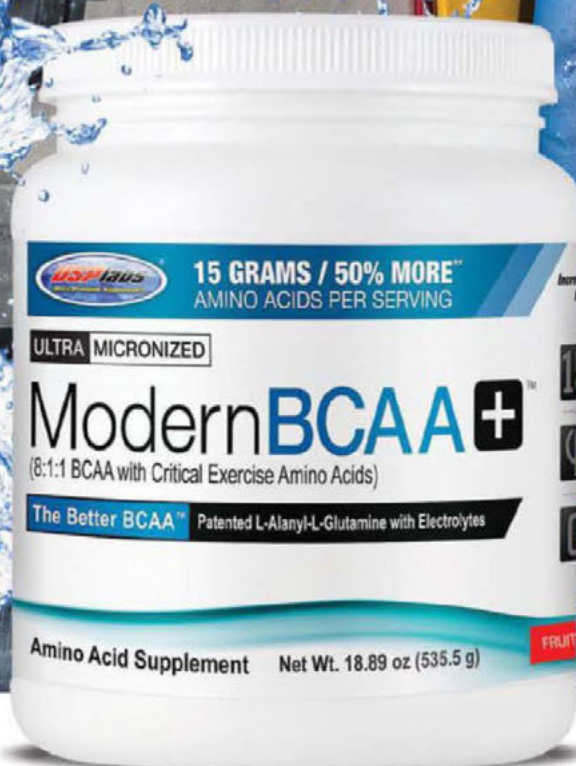
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LEUCINE: #1 MUSCLE ACTIVATOR



Muscular Development is all about its namesake—the development of muscle. Our bodies build muscle in response to hours of pounding in the gym and attention to recovery outside the gym. Training literally beats us down. Training puts our bodies in a catabolic state, breaking down glycogen, muscle and fat. With the right behaviors in the kitchen and the shaker cup, we can reverse this destructive process and grow from our efforts.

Nature inherently wants to conserve energy, and building muscle takes lots of energy. Muscle is heavy, and metabolically active. If there's no fuel available, nature says we can't afford to build muscle. Our bodies have to be able to sense whether there is enough fuel in our environment to build muscle.

It was once thought that insulin was the driving force behind muscle growth. If sugar calories were available, muscle could grow, right? Boost insulin and build muscle, right? Wrong! The existence of plenty of sugar (glucose) in our system only tells the body that we don't need to break down muscle for energy. Thus, insulin's main role is to store those nutrients and avoid breakdown of what was stored.

Insulin encourages the body to store glucose in muscle, liver and fat. It clears toxic sugar out of our blood. Yes, sugar is toxic. Sugar caramelizes our insides in a reaction with proteins that makes them foreign to our immune system. The subsequent inflammation from sugar leads to further tissue damage, insulin resistance and an inability to repair muscles after exercise.¹ *Sugar is KRYPTONITE! It makes us weak!*

In fact, it only makes sense that nature would have a non-insulin-dependent way of differentiating whether or not there are nutrients available to build muscle. Since our bodies can make glucose from particular amino acids and fats, glucose isn't a great way to sense whether nutrients are available in our environment in order to grow. In other words, we need a better signal, a "key" if you will, to build muscle other than glucose, because our bodies already auto-regulate blood glucose to feed the brain.

THE ANTI-KRYPTONITE THAT BUILDS MUSCLE

We need the "anti-kryptonite." It would make sense that the nutrient signal from our food would come in the form of an essential nutrient that our bodies can't make and can't become glucose. There are essential amino acids, essential fats, but no essential carbohydrates. Since the essential fats play a structural role and combine with a glycerol backbone that can be converted into glucose, this leaves the essential amino acids as a potential "key" to turn on our nutrient sensor.

In particular, the essential amino acids that our body can't convert to glucose (i.e., non-glucogenic or purely ketogenic), lysine and leucine, make the most sense as a nutrient to turn on muscle. However, lysine can be converted to carnitine for fat shuttling, and its uptake is easily inhibited by leucine; thus, leucine wins! *Leucine is the anti-kryptonite!*¹ *It can't become glucose, it stimulates insulin release and it builds muscle as metabolic currency!*

Science supports that, there's a threshold in our diets that must be met in order to turn on muscle protein synthesis. One study demonstrated that distributing protein evenly throughout meals in the day was more effective than the typical "skewed" American diet.² Most Americans eat very little protein at breakfast, a little more at lunch and a lot more at dinner. When scientists put equal amounts of protein in each meal with the same daily total as a skewed diet, the equally partitioned meals resulted in better muscle protein synthesis.

Further, when balanced protein is fed to those dieting with four meals per day, they maintain muscle better than when they follow a skewed protein pattern.³ This probably isn't news to you, as most bodybuilders understand the importance of preparing high-protein meals evenly spaced throughout the day when prepping for a show. Just like any other "stimulus," whether lifting for a body part or eating a meal, the system needs some downtime to restart growth.⁴ It is presumed by this research on skewed diets that a threshold for turning on muscle protein synthesis wasn't

being met by the lower-protein meals (breakfast and lunch).

Science has suggested that the threshold for turning on muscle protein synthesis is met by the leucine content of a protein. Our bodies sense the leucine content of our meals through complex molecular mechanisms. Simply, leucine acts as the “key” to turn on muscle protein synthesis through direct and indirect activation of the mTOR pathway.¹ Moreover, it does this in a manner that doesn't depend on the presence of insulin.⁵ Thus, the leucine content of a meal could affect a meal's ability to build muscle after training.

Despite the confusion created by the Recommended Dietary Allowance (RDA) for protein requirements of 0.8 grams per kilogram of bodyweight per day, sports science shows that this is highly inadequate for strength-training athletes. Furthermore, the RDA doesn't say “high-quality proteins.” All proteins are not created equal in their ability to support metabolism and build muscle. Studies show that it takes 30 percent more soy protein to have the same effect on muscle protein synthesis as whey protein.⁶ It just so happens that whey protein has 30 percent more leucine, gram for gram, than soy protein.

OUR BODIES RESPOND WITH MUSCLE GROWTH

Regardless of all this science, we, as humans, are definitely made to respond to leucine with growth! Whey is the protein richest in leucine. Whey and casein make up the milk proteins. Cow's milk contains 80 percent casein and 20 percent whey. However, human milk contains 60 percent whey and 40 percent casein. Mother's milk contains nearly 10 percent leucine, similar to whey protein concentrates. When we are growing our most, as infants, nature has decided that we need more leucine. If you want to grow, you need to focus on the leucine content of your meals.

Some feel that once leucine has reached a minimum threshold, often around ~2 grams in a meal, muscle protein synthesis is maximally turned on and extra leucine won't have a greater effect. However, a study in relatively young, active-duty military personnel demonstrated that 3.5 grams of leucine mixed with essential amino acids was more effective in turning on muscle protein synthesis than 1.87 grams of leucine with the same amino acids.⁷ Besides, the older we get, the less sensitive we become to leucine's signal to make muscle.⁸

One thing is for certain— you can't just chew on leucine all day and expect to grow lots of muscle. Leucine is the key to turn on the car (so to speak), but you need fuel to keep it running, which also requires intermittent rest stops. Leucine acts as a switch to turn on muscle growth, but if the essential amino acids found in complete proteins aren't available, there are no materials to build the muscle. When scientists put leucine in the drinking water of rats, despite the constant leucine stimulus, they failed to build more muscle. When there is a “de-synchronization” in the leucine stimulus and availability of essential amino acids, we fail to achieve the goal of turning on muscle growth.⁸

In addition, leucine may act as a signal to limit food intake by acting on mechanisms in the brain.⁹ Leucine says, “Quality food has been eaten, and we can stop eating now.” This is great if your goal is to lose weight and starve yourself, but if you stop eating without having eaten a good blend of essential amino acids from food, your muscle won't grow. The moral of the story is that leucine is nature's way of knowing that high-quality protein has been eaten and we can build muscle. You shouldn't take leucine supplements by themselves to build muscle.

My suggestion, as explained by my book *Leucine Factor Diet* (available November 2015) and App (available at the App Store), is that you should shoot for optimizing the leucine content of the proteins you eat. All proteins have a different percentage of leucine. Shoot to optimize your muscle metabolism and insulin sensitivity with the anti-kryptonite effects of leucine. ■

SUPPLEMENTS CAUSE Lumps in Your Nuts! By Victor R. Prisk, M.D.

The title of this sidebar is almost as ridiculous as the science to be discussed here. A recent “scientific” article has suggested that using muscle-building supplements can cause testicular cancer. These studies are almost as good as the studies saying that fish oil causes prostate cancer, or that chocolate is good for you.

There may be some mildly useful data in some of these studies to suggest a need for further research, but in no way are these studies powerful enough that they should make headlines. Unfortunately, the “lame-stream” media has latched on to the studies to create sensational headlines to catch your attention like the title of this sidebar.

The pseudo-scientists who suggested this correlation lumped together a survey of 30 different compounds that subjects used at least one time per week for four weeks. This sounds a lot like how a bodybuilder takes supplements ... NOT! Sorry, I loved the '90s. It is suggested that because supplements are often tainted and unregulated, that this is perhaps the reason for the carcinogenesis.

Folks, there is a growing army against your supplements forming in Washington and the scientific community (Dr. Pieter Cohen, to name one). Contact your Congressman to protect your supplements. I am all for boosting manufacturing oversight and truth-in labeling standards for your safety, but there are those who seek to take down the entire industry. What then happens is they gain control of your supplements, and they become as expensive as Viagra at \$20 per pill.

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Dr. Victor Prisk is a board certified orthopaedic surgeon and IFBB professional bodybuilder in Pittsburgh, PA. Dr. Prisk is an active member of the GNC Medical Advisory Board and creator of the “G.A.I.N. Plan.” He is an NCAA All-American gymnast, champion swing dancer and NPC Welterweight National Champion.

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PROSUPPS PRESENTS:

SMASH AND SHRED STACK

TIME TO GET PEELED!

With summer knocking at our door, everyone is looking to get in shape. That goes for the hardcore bodybuilder meathead, or your everyday soccer mom who wants to get rid of a little bit of those love handles she built up over the long, cold winter. The problem is, most people get on track way too late, and then expect to look good for the beach rather quickly. Well, even if you are a late starter, there are ways to help dial you in, fast—and that is exactly what you need in a crunch. ProSupps designed just the stack to help you drive through your workouts, and at the same time melt away that unwanted body fat with ease. Their amazing Smash and Shred Stack is just what you need to get this party started.

MR. HYDE: CAN YOU HANDLE IT?

There are more pre-workout formulas out there than you can shake a stick at, so what does a veteran or newbie do to make sure they get the most bang for their buck? For the stimulant junkies out there who love the rush that a high-powered pre-workout formula can bring, Mr. Hyde is just what you've been waiting for.

ONE HELL OF A RIDE!

Yes, folks ... this is the real deal when it comes to getting jacked-up for your training sessions. I have tried just about everything on the market, and I have to say this is one of the strongest ever made. This is not for the faint-of-heart, and was not designed for some senior citizen looking to waddle on the treadmill while watching CNN. This stuff is that strong. I am telling you now, if you are some wannabe punk who goes to the gym to chat with the ladies or make friends, this stuff is not for you. But if you are a die-hard bodybuilder or athlete looking to take your performance to unseen heights, then get ready for one hell of a ride!

SUPER POTENT DOSING

While other brands suggest you take two and even three scoops of their product before you even feel anything, Mr. Hyde's maximum dose is just one scoop. Yes, you heard that right. To be honest, I have gotten more of a kick from a half a scoop of Mr. Hyde than even two scoops of other formulas on the market.

Mr. Hyde stuff will pump you up big time, but what is nice is that you don't feel cracked out. The energy is clean and the focus is like an out-of-body experience. Even better is the fact that you don't crash while using it.

Another thing I like about Mr. Hyde is that the entire formula is laid out for you to see, with no proprietary formula melodrama. Just look at the ass-kicking breakdown!

VEXXUM: FAT-BURNING INCINERATOR

Now, if you are looking to burn fat in a hurry, then Vexxum is off the charts. The research and development team at ProSupps put together one amazing creation with this thermogenic masterpiece. They have used some of the most potent thermogenics known to man—in a dosing pattern you can actually feel working.

When you look in the mirror, you will see with your own eyes the power of Vexxum—and how it will help obliterate fat like no other. This is a real-deal fat burner that was designed to help you melt away fat with ease, while at the same time giving you all-day energy. On the left, just look at this one-of-a-kind fat-burning matrix to see exactly what I mean.

ONE HELL OF A STACK!

If you are looking for a formula to take your workouts to a place you never imagined, Mr. Hyde is just the product to make it happen. When it comes to melting away the flab like a blowtorch to butter, Vexxum is a no-brainer. You won't find anything stronger! This one-two punch will help transform your performance and your physique like no other.

When other companies make fake promises to lure you in to buy their products with glitz and glamour, think again. ProSupps is the real-deal when it comes to providing athletes with products that are out of this world. Try this stack even once, and I know you will be a believer like me! ■

MR. HYDE

Serving Size: 1 Scoop (6.2 g)
Amount Per Serving

STRENGTH MATRIX	5,000 MG
BETA-ALANINE	2,500 MG
CREATINE HYDROCHLORIDE	1,000 MG
L-LEUCINE	500 MG
AGMATINE SULFATE	500 MG
L-CITRULLINE MALATE	500 MG

CAFFEINE MATRIX	419 MG
CAFFEINE ANHYDROUS	300 MG
INFINERGY (DICAFFEINE MALATE)	69 MG
CAFFEINE CITRATE	50 MG

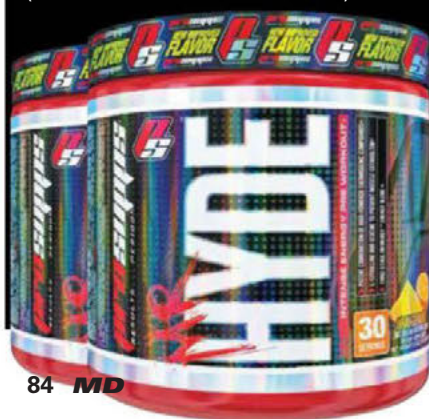
INTENSITY MATRIX	154 MG
PIKATROPIN (PIKAMILON)	50 MG
N-METHYL TYRAMINE	50 MG
HORDENINE	50 MG
YOHIMBE BARK EXTRACT	2 MG
RAUWOLFIA VOMITORIA ROOT EXTRACT	2 MG
(STD. MIN. 90% ALPHA-YOHIMBINE)	



VEXXUM

Serving Size: 1 Capsule

VEXXUM BLEND	627 MG
CAFFEINE ANHYDROUS	
COCOABUTEROL COCOA SEED EXTRACT	
INFINERGY DICAFFEINE MALATE	
LOTUS SEED EXTRACT	
THEACRINE (AS TEACRINE)	
HORDENINE HCL	
OCTOPAMINE HCL	
CAFFEINE CITRATE	
YOHIMBE BARK EXTRACT	
SULBUTAMINE	
RAUWOLFIA VOMITORIA ROOT EXTRACT	
(STD. MIN. 90% ALPHA-YOHIMBINE)	





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BETTER THAN CLENBUTEROL: FORMOTEROL?

Clenbuterol belongs to a class of drugs known as beta-agonists that bind and activate the beta-adrenergic receptors, or more specifically with clenbuterol, the beta2-adrenergic receptor. Medically speaking, clenbuterol is used to activate the beta2-adrenergic receptors within the smooth muscle cell found within the lung, inducing bronchodilation for more trouble-free breathing in asthmatics. While designed to treat respiratory issues, it is clenbuterol's fat-burning and muscle-building qualities that has made it so popular among bodybuilders and athletes.

Clenbuterol has several drawbacks that negatively impact its physique-enhancing qualities. One of those being the rapid inhibition of function within the cell that swiftly shuts down the fat-burning and muscle-building activity of clenbuterol. In addition, recent scientific evidence has shown that clenbuterol may also stimulate muscle atrophy, if taken for extensive periods of time, by increasing the level of the muscle-depleting molecule myostatin.

Clenbuterol use can also cause adverse health effects by activating the beta1-adrenergic receptor primarily located in the heart, despite the fact that clenbuterol was designed to only activate the beta-2 adrenergic receptor.¹ Activation of the beta1-adrenergic receptor in the heart by clenbuterol has been reported to induce tachycardia (increased resting heart rate), which could potentially disrupt normal heart function and possibly cause sudden cardiac arrest and death.

As a result of the many negative properties associated with clenbuterol use, there has been considerable interest in developing a therapeutic with similar capacity as a bronchodilator, absent the deleterious side effects. There has also been interest in developing a new drug with enhanced anabolic properties, also with minimal side effects relative to clenbuterol. This interest stems from the fact that most current therapeutic options for treatment of sarcopenia, or loss of muscle mass due to aging, are limited in scope.^{2,3} The loss of skeletal muscle mass is a key factor influencing health and wellness.⁴

In order to address this need, a relatively new beta2-agonist, formoterol, has been approved for the treatment of asthma that is more effective at triggering muscle growth and reducing body fat, while also being more selective at specifically binding beta-2 adrenergic receptors—thus reducing the likelihood of many of the side effects previously linked to clenbuterol.

TORCH FAT LONGER WITH FORMOTEROL

While clenbuterol has the extraordinary capability to stimulate fat loss, it also quickly triggers control mechanisms within the cell that shut down clenbuterol activity in a short period of time—likely due to the relatively large amounts of drug required to induce a noticeable impact on



fat loss. This, of course, made scientists wonder if this limitation could be overcome by consuming a smaller quantity of a more potent drug, like formoterol, which would diminish this negative feedback mechanism—ultimately leading to a longer duration of activity and therefore, fat loss.

In fact, that is exactly what occurred in a recent study where doses as low as 320 micrograms of formoterol per day increased metabolic rate in male test subjects by more than 10 percent, while also increasing fatty acid oxidation by almost 25 percent, all without causing any increase in heart rate.⁵ This demonstrated that a lower dose of beta-agonist-mitigated negative control mechanisms generated a stronger propensity to lower body fat.

MORE POTENT TRIGGER OF MUSCLE GROWTH

Several studies have shown that clen-

buterol has anabolic qualities that increase muscle protein synthesis, as well as anti-catabolic qualities that decrease muscle protein degradation—leading to increased amounts of muscle cell protein, which generates muscle growth. More specifically, one of these studies by Kim et al.⁶ demonstrated that in mice, clenbuterol stimulates muscle protein synthesis by activating the mTOR-signaling pathway. Mice fed clenbuterol for 14 days showed an eight percent increase in muscle mass that corresponded with activation of mTOR. In a second investigation, Goncalves et al.⁷ demonstrated that rats fed three milligrams of clenbuterol per kilogram of bodyweight for three days have a significant decrease in muscle cell proteolysis, leading to decreased muscle atrophy.

While the muscle-enhancing qualities of clenbuterol are impressive, similar doses of formoterol and clenbuterol resulted in considerably greater muscle growth of 14

percent in the mice receiving formoterol.⁸ In addition, formoterol has more recently been shown to stimulate muscle protein anabolism in humans using a similarly low dosage of one to two micrograms of formoterol per kilogram of bodyweight per day.⁹ Interestingly, the effect on muscle growth was weaker in men, where it was about one-third of that in women—suggesting that the muscle-enhancing effects of formoterol are strongly influenced by the different levels of sex steroids, such as testosterone and estrogen, between the sexes.

Although it is not completely understood why formoterol is a more potent muscle builder than clenbuterol, one of the more likely reasons for the superior strength of formoterol is related to the greater lipophilic nature of formoterol compared to clenbuterol¹⁰, a physical property caused by the longer carbon side chains found on formoterol relative to clenbuterol.¹¹ The greater lipophilicity of formoterol causes a stronger interaction between formoterol and the lipid cell membrane, which is where the beta2-adrenergic receptor is located. This interaction with the lipid membrane effectively prevents the rapid clearance of formoterol from the area, thus resulting in a longer duration of binding and activation of the beta2-adrenergic receptor—ultimately causing greater muscle growth at a lower drug dosage relative to clenbuterol.

CLENBUTEROL INCREASES MYOSTATIN, WHILE FORMOTEROL DECREASES IT

Another mechanism contributing to the greater capacity of formoterol to induce muscle growth relative to clenbuterol has to do with the different influence that each compound has on myostatin function within muscle. Myostatin is a member of the transforming growth factor-beta (TGF-beta) super family of growth factors where, despite being a growth factor, it actually reduces muscle growth by initiating many different pathways that inhibit muscle hypertrophy, while also stimulating muscle atrophy.

It has recently been shown that clenbuterol's muscle-enhancing capacity is reduced by increasing levels of myostatin within the muscle cell. In this study, researchers analyzed the level and activity of myostatin in the muscle of rats that were given clenbuterol for 21 days straight. While muscle hypertrophy was stimulated from day three to 14, the study showed increased levels and activity of myostatin after consuming clenbuterol for 21 days that abrogated muscle growth.⁶

In contrast, formoterol has been shown to negatively regulate myostatin expression and activity in muscle¹², representing a key difference between formoterol and clenbuterol that conceivably contributes to the more vigorous capacity of formoterol to enhance muscle growth.

In closing, despite the increased potency of formoterol for muscle growth and fat loss, formoterol still poses some significant health risks, especially when used without advice from a medical doctor. ■

For most of Michael Rudolph's career he has been engrossed in the exercise world as either an athlete (he played college football at Hofstra University), personal trainer or as a research scientist (he earned a B.Sc. in Exercise Science at Hofstra University and a Ph.D. in Biochemistry and Molecular Biology from Stony Brook University). After earning his Ph.D., Michael investigated the molecular biology of exercise as a fellow at Harvard Medical School and Columbia University for over eight years. That research contributed seminally to understanding the function of the incredibly important cellular energy sensor AMPK—leading to numerous publications in peer-reviewed journals including the journal *Nature*. Michael is currently a scientist working at the New York Structural Biology Center doing contract work for the Department of Defense on a project involving national security.

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IS THERE A BEST ORDER OF EXERCISE?

Generally accepted resistance training guidelines recommend that exercise order should progress from large to small muscle group movements over the course of a workout session.¹⁵ In this regard, multi-joint exercises such as squats, presses and rows should be performed early in the session, while single-joint movements such as leg extensions and biceps curls are performed later on. The reasoning for such a recommendation is predicated on the theory that performing small muscle exercises first fatigues the smaller synergistic muscles required to carry out compound movements, thereby impairing subsequent multi-joint performance. For instance, performance of skull-crushers before the bench press would fatigue the triceps brachii, thereby hindering the ability to overload the larger pectoralis major muscle when benching. Since overload is essential to muscle development, it's reasonable to assume that growth would be compromised.

The question is: does scientific evidence back up the assumption? Let's take a look at what the research shows.

Acute training studies consistently show a reduction in the number of repetitions achieved when a given exercise is performed later, as opposed to at the beginning of a session.^{9,10,12} These findings hold true regardless of whether the exercise is for a small or large muscle group, and persist irrespective of the percentage of one-repetition maximum. Note, however, that since the absolute amount of weight used in an exercise is necessarily heavier during compound movements, the magnitude of decreases tend to be greater in these exercises when they're performed after those involving small muscle groups. Hence, volume load—a potentially important factor for hypertrophy⁶—is generally better preserved when compound movements are placed early in the training sequence.

Despite a seemingly logical basis in support of the recommendation to perform large-muscle exercises first, long-term training studies investigating the effects of exercise order on muscle hypertrophy indicate otherwise. Brazilian researchers¹¹ assessed how exercise order influences growth of the arm muscles following 12 weeks of upper-body training. One group of subjects performed four exercises in the following order: barbell bench press, lat pulldown, triceps extension and biceps curl (i.e., large muscles before small muscles), while another group performed the exercises in the reverse order (i.e., small muscles before large muscles). Somewhat surprisingly, performing large muscle exercises first did not enhance hypertrophy. In fact, triceps growth increased only in the group that performed small muscle group exercises early in the session! A follow-up study by the same researchers showed similar results, with the triceps gaining more size when exercise order progressed from small to large muscle movements.¹³ Based on these studies, it would seem like there's actually a benefit to training the arms before the muscles of the torso, right?

Not so fast.

It's important to realize that neither study measured hypertrophy in the pectorals or the lats. It would be reasonable to speculate that whichever muscles were trained early on in the workout grew more than when they were performed toward the end of the session. All told, this suggests a benefit to training your weak points first, and leaving the muscles that respond well until the end of the bout.

Some fitness pros advocate performing lower-body exercises before upper-body movements. This approach is based on the hormone hypothesis, whereby a surge in testosterone, GH and IGF-1 from working the leg muscles is purported to improve the anabolic environment when training the upper-body musculature.¹⁴ A study by Ronnestad et al.⁷ seems to support this contention, with results showing that growth of the elbow flexors (i.e., biceps brachii and brachialis) was substantially



enhanced when trained after performing multiple sets of leg presses, leg extensions and leg curls. The researchers attributed the increased growth to greater elevations in post-exercise anabolic hormonal levels. One little problem: recent research shows that exercise order (lower to upper versus upper to lower) has no effect on delivery of testosterone, growth hormone and IGF-1 to the arm muscles.¹⁴ What's more, emerging evidence shows that acute elevations in anabolic hormones following exercise are of questionable significance, and at best have a small effect on overall growth.⁸ Thus, if there is a benefit to performing lower body exercise first in a session—a possibility that's still highly equivocal—it likely is not influenced much if at all by hormonal fluctuations.

What about a potential benefit to pre-exhaustion? You know, where a single-joint exercise is immediately followed by a multi-joint exercise for the same muscle group (i.e., chest flye followed by bench press)? The strategy sounds good in theory. After all, pre-fatiguing the target muscle should enhance recruitment of its highest-threshold motor units—the ones associated with the largest fast-twitch fibers—during the ensuing compound exercise. Thing is, EMG studies don't support the hypothesis. In fact, muscle activation of the quads was actually found to be lower in the leg press when performed following leg extensions to failure.² Similarly, Gentil et al.⁴ showed that activation of the pectoralis major was reduced during the bench press after performance of a set of pec deck flyes.

To determine whether pre-exhaustion influences muscle growth over the long haul, Fisher et al.³ randomized resistance-trained men into one of three groups: a group that performed an isolation exercise and then immediately performed a compound exercise (i.e., pre-exhaustion); a group that performed the same exercise order with a 60-second rest interval between sets; and a group that performed exercises following traditional guidelines (compound exercise performed early on in the session, followed afterward by single-joint movements) with a 60-second rest between sets. Exercises included the pec flye, chest press, leg extension, leg press, pullover and pulldown. One set of eight to 12 repetitions was performed for each exercise. Training was carried out twice a week for 12 weeks. The results? Consistent with EMG findings, all groups increased lean mass over the study period, but no significant differences were seen between the participants who pre-fatigued their muscles compared with those who did not.

So what can we take away when reconciling all the evidence? The practical message is this: prioritize exercise order so that lagging muscles are trained first in a workout; whether the muscle is large or small shouldn't matter. In this way, you can channel your efforts to bring up weak areas when your energy levels are at their peak. It's a concept popularized by Joe Weider many years ago, and it still holds true today. Sometimes, research needs time to catch up with what we learn in the trenches. ■



Prioritize exercise order so that lagging muscles are trained first in a workout. In this way, you can channel your efforts to bring up weak areas when your energy levels are at their peak.

Brad Schoenfeld, Ph.D., CSCS, FNSCA is widely regarded as one of the leading authorities on training for muscle development and fat loss. He has published over 60 peer-reviewed studies on various exercise- and nutrition-related topics. He is also the author of the best-selling book, *The M.A.X. Muscle Plan*, and runs a popular website and blog at www.lookgreatnaked.com.

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MHP PRESENTS:

DARK MATTER ZERO CARB CONCENTRATE



LEAN AND MEAN

When it comes to packing on muscle, we all know the importance of post-workout nutrition and supplementation. In the off-season, it is pretty easy taking in an abundance of carbs and protein in liquid form right away, and then loading the same combo with solid food an hour later. Now, where this all gets quite tricky is trying to still pack on muscle while you're in a caloric deficit, or dieted state. Most people have a hard time not losing any muscle while leaning down, so how is it possible to actually gain muscle while getting ripped? With summer in full swing, getting sliced and diced is the name of the game. So where do the top IFBB pros go for their post-workout supplementation when getting ready for a competition? The answer is MHP's Dark Matter Zero Carb Concentrate!

NOT YOUR RUN-OF-THE-MILL POST-WORKOUT FORMULA

While other post-workout formulas are loaded to the brim with carbs, this simply won't cut it when you are looking to dial-in that six-pack. Even worse, many formulas use outdated sugars that are guaranteed to add mass in the form of a spare tire around your waist, instead of adding an

extra inch of muscle to your arms. While wading through a plethora of formulas on your local health food store's shelves, it can be quite confusing to choose the right product that will give you the best of both worlds. Like I said before, trying to build muscle while dropping body fat at the same time is no easy task. That is why the R&D team at MHP decided to fill the supplement gap that many bodybuilders have experienced for years, as they searched for a product that was unavailable until now.

DARK MATTER ZERO CARB CONCENTRATE:

A CUT ABOVE THE COMPETITION!

You may be wondering, what makes Dark Matter Zero Carb Concentrate so special? If you have been in the bodybuilding supplement loop, then you know that the original Dark Matter is one of the most popular post-workout creations ever made. It has gained popularity with tens of thousands of users worldwide, and for one good reason ... it works! The researchers at MHP wanted to take all that was good about the original, and apply it to athletes looking to get lean. Through countless hours in the laboratory and also beta testing on professional bodybuilders, MHP released its breakthrough formula that will have all other companies scrambling to copy it.

I am sure you are as excited as I am to take a look at exactly what this formula is all about. Dark Matter Zero Carb Concentrate contains three performance blends that take advantage of the most recent scientific discoveries in post-exercise nutrition for optimizing protein synthesis, and the anabolic actions of insulin to enhance muscle growth and recovery without carbs.

PROSYNTHAGEN PEPTIDE THE ULTIMATE PROTEIN SYNTHESIS ACCELERATOR

ProSYNTHAGEN Peptide is a researched-based combination of oligopeptides, insulinotropic amino acids and BCAAs in a potent leucine-loaded 10:1:1 ratio and a concentrated source of glutamine peptides. Research shows that this combination of amino acids has powerful effects on stimulating protein synthesis, the release of insulin and the replenishment of glutamine stores. This leads to restoring glycogen in muscle, even in the absence

of carbs. This insulin-spiking ability helps increase muscle growth while avoiding fat storage commonly seen when consuming high sugar, post-workout formulas.

HYDROSIZE MULTI-PHASE CREATINE TRANSPORT AND CELL VOLUMIZING MATRIX

HydroSIZE is a multi-source creatine/glycerol complex for enhanced muscle volumizing and bioenergetic creatine loading into muscle tissue. It contains creatine monohydrate, creatine magnesium chelate and creatine gluconate, making this the most complete creatine trifecta ever designed. This unique combination will be quickly transported in tandem with peak insulin levels, amino acids and glycogen into muscle tissue for the replenishment of ATP and increased muscle cell volumization. This leads to faster muscle growth and greater explosive power in the gym and on the field. It also helps increase muscular energy to keep you going, set after set—to help build lean, dense muscle.

IAMP INSULIN AMPLIFIERS

This is one of the most important additions to the Zero Carb Concentrate formulation. It contains insulin amplifiers like 4-hydroxyisoleucine and chromium picolinate, and promotes the increased uptake of critical post-workout nutrients into muscle tissue. This performance blend helps improve insulin sensitivity, and enhances recovery from hard training sessions. It increases nutrient absorption for maximum results—making it the ultimate nutrient-partitioning matrix!

“REAL DEAL” POST-WORKOUT

So as you can see, MHP has put together one hell of a formulation. Using only the highest-quality ingredients and the most cutting-edge research, Dark Matter Zero Carb Concentrate is in a league of its own. While other companies have tried to knock it off, once again they have failed miserably. If you are looking to fuel your post-workout window while building lean muscle and getting diced at the same time, then look no further. This is exactly what you need to take your physique and performance to the next level! ■

For more information, visit mhpstrong.com.

DON'T RISK MUSCLE TO GET RIPPED

ZERO CARB POST-WORKOUT MUSCLE ACTIVATOR SPARES LEAN MUSCLE WHILE DIETING

One of the biggest risks every athlete on a low carb, low calorie or pre-contest diet faces is the loss of muscle mass. While low carb and low calorie diets are effective for facilitating fat loss, they also leave your body vulnerable to falling into a catabolic state. DARK MATTER ZERO CARB CONCENTRATE is the result of the latest research surrounding how to elicit maximum post-workout protein synthesis, ATP replenishment and insulin spiking without using loads of carbs or sugar. Taking DARK MATTER ZERO CARB CONCENTRATE immediately after your workout will help create a favorable muscle building environment so you can get the most out of your workouts and be your absolute best, even when you are dieting!

- **Oligopeptides, BCAAs & Glutamine Peptides Stimulate Protein Synthesis**
- **Insulinotropic Amino Acids Spike Insulin Without Sugar or Carbs**
- **Creatine/Glycerol Complex Boosts Creatine Uptake & ATP Replenishment**

Every Workout Ends with DARK MATTER!



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BUILDING

THE BOSTON

MASS

FROM HELLISH CHILDHOOD TO A HELLUVA BODYBUILDER



**HOW JOSE RAYMOND SURVIVED A NIGHTMARE
UPBRINGING, MADE THE BIG DECISION AT AGE 34
TO JOIN THE BIG BOYS, AND WITH HIS 2015 ARNOLD
212 VICTORY CARVED HIMSELF OUT AS NUMBER
ONE CONTENDER FOR FLEX LEWIS' TITLE**

BY PETER MCGOUGH • PHOTOGRAPHY BY PER BERNAL





"As soon as I was born, he was carrying me around like a football and he was only 5 years old. He did everything he could to take care of me; so he was my only true caretaker that I ever remember."



In 40 years I've done countless interviews, many of them following a pattern. For instance, with people you've never interviewed before, you start out with warm, soft questions while throwing in a few obscure facts about your quarry to give him confidence that you know who they are, you've done your research, and give him or her a sense of importance. So settling down to my first-ever interview with 2015 Arnold Classic 212 champ Jose Raymond, I prepared for a similar pattern. So we began with two functional openers:

PM: I have your birth date as December 29, 1974— is that correct?

JS: Yes, sir.

PM: Where were you born?

JS: Boston – I'm a Boston man, through and through ... always will be.

I threw in a third softball, and what I got back was a sensationally jarring home run out of the park and into another world. In that moment, I got a searing insight into the heart, soul and psyche of man I admired immensely before our interview, but revere even more now. I was taken into a place I had never visited, into an inferno of misery that no one should endure, but too many do.

The third softball was, "Describe

your early childhood."

In matter-of-fact style, Jose replied, "Have you ever read the book *Angela's Ashes*?" I concurred. *Angela's Ashes* was the autobiography of teacher Frank McCourt published in 1996, eventually made into a movie starring Emily Watson and Robert Carlyle. Set in the 1930s and '40s, the book and film chronicle McCourt's impoverished and heartbreaking childhood in Brooklyn before the family had to move back to its roots in Limerick, Ireland.

This month's cover man continued, "My life was like that book. I was born into very bad circumstances. We lived in a ghetto in absolute squalor. My birth parents couldn't always provide for us so me and my brother Tito, who is five years older than me, were shuttled back and forth from foster homes to our birth home because our parents did not want to give us up. But the authorities believed we could not stay with them because they couldn't cope on account of having so many kids. I was the youngest of eight. I'm now 40 years old. My oldest brother is 60, I have another one who is 55, a 52-year-old sister, twins that are 50, Tito is 45, then came a sister who is 42.

"All sorts of tragedy and turmoil were happening. Many times, there was

no food in the house, or electricity or heating in a Boston winter. Violence and alcohol addiction surrounded us. There was another set of twins that died at birth. Before I was born, my eldest brother Juan was holding his 1-year-old sister at sort of a party, when a fight broke out and somebody got out a gun and fired it and killed the 1-year-old. That's the type of situation that we were commonly in. And that is why we were ultimately taken away. I was lucky enough to have been taken from that at an early enough age. We were eventually adopted when I was 5 and Tito was 10. We were very lucky to get to be raised together. I have seen my birth parents a few times through the years, but it's not a regular thing or anything like that. But I've stayed in contact with my siblings. They're scattered all over the country: Boston, L.A., Chicago, Las Vegas, Florida. I see them when I visit those places."

What follows now is a step-by-step account of how Jose Raymond, in his own words, rose from such wretched circumstances to become one of the most respected bodybuilders on the planet and a major contender for this year's 212 Showdown title at September's Olympia Weekend.

STEP ONE: TITO IS THE MAN

Obviously, Tito and I are the closest because we grew up together. And you know he got me into bodybuilding. I certainly wouldn't be where I am today if it wasn't for him. You know he actively took on the role of father figure at a very young age. He didn't really get the chance to be a child, because he was always worried about me. As soon as I was born, he was carrying me around like a football and he was only 5 years old. And he immediately thought I was his, and he did everything he could to take care of me; so he was my only true caretaker that I ever remember.

When I was 4, they sent me and Tito to separate foster homes for 18 months. I think they believed back then that the kids shouldn't see each other because they felt we wouldn't be adopted by the same family. Being separated from my brother was the worst time of my life. Being apart from him was terrible—everything else I could deal with, but

not that. And when we were finally adopted when I was 5½, even though we had many rough moments, we were together so it was all manageable. Tito and I developed a resistance and a work ethic. From then on, we used to tell each other that we'll never live like this as adults and we'll never—if we're lucky enough to have children—we will never have them experience what we experienced. I don't say this because he's my brother, but Tito is one of the greatest human beings I've ever met in my life. Most people who have met him say he's made a huge impact on their life. He really is as genuine as you can be.

We were eventually adopted when I was 5 and Tito was 10. We were very lucky to get to be raised together. He has worked as a personal trainer at Gold's Gym Venice since 1999, and I visit him regularly and we speak on the phone most days. We're brothers but we're best friends as well. He's been

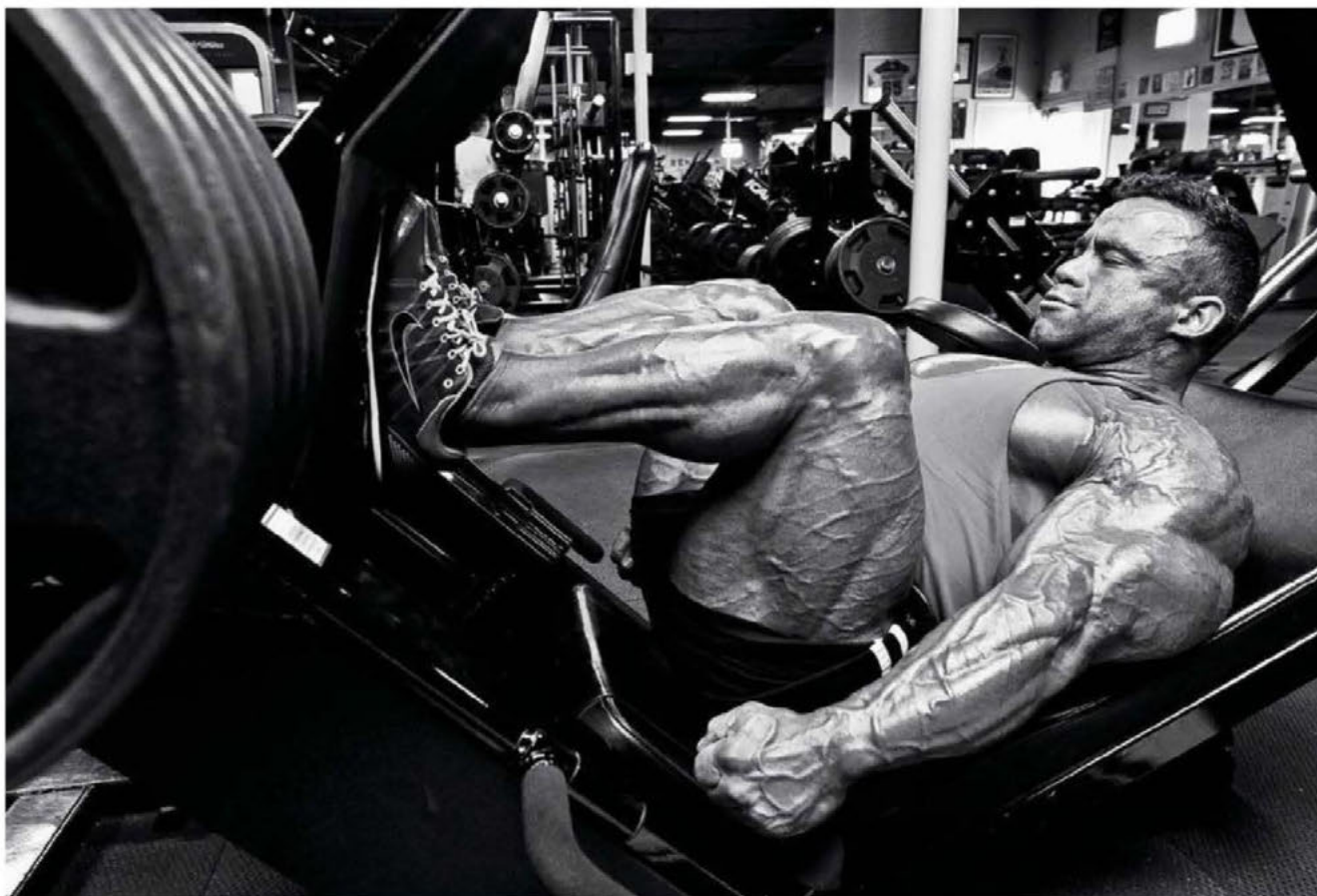
married for 12 years to fitness model pioneer Amy Fadhli, and they have two lovely kids.

STEP TWO: ADOPTION

My birth parents were Puerto Rican and my birth name was Sotomayer. I'm very proud of my Puerto Rican heritage and I have a huge Puerto Rican fan base, and so I'm very Puerto Rican. But most people that meet me think I'm Italian, because of my coloring and I grew up in Boston, which is very Italian. When Tito and I were adopted, our names were changed to Raymond, which is my adopted father's name. He is French Canadian and my mother is Polish. I appreciate everything our adoptive parents gave to us. I knew they loved us and they're very proud of both my brother and me. They did the best they could, and that's all that matters to me. We definitely had a good relationship with them. I feel very blessed that they adopted us.

At 5, I didn't realize I had such a hard upbringing because that is all I'd known. Upon being adopted we lived in Wakefield, which is about 12 miles north of downtown Boston. It's a very affluent town, although the Raymond family was not. I got to see how other kids

“[Tito] got me into bodybuilding. I certainly wouldn't be where I am today if it wasn't for him.”





dressed, the nice houses they lived in, how they sat down with the family for dinner every night. For me, most of my clothes were hand-me-downs from Tito. Because of our heritage, we stood out from the other kids and in the summer we were really tan with brown, curly hair and we didn't really fit in. And so a lot of the derogatory terms were coming out.

STEP THREE: FIRST WORKING OUT

Because of being called names at the age of 7, I had anger management issues and was getting into fights. A social worker at the time thought it

would be a good idea for both of us to find an outlet, so she bought us a punching bag and some weights and that's how that all started. By the age of 7, I was already doing pull-ups, bench presses and dumbbell curls and stuff like that. In sports I was good at baseball, and went on to play college football as a fullback and I wrestled as well. My physique looked very different than everyone growing up in high school. By the time I was 14 years old, I was the biggest kid in school. I was already 165 pounds and really muscular. I wasn't comparatively short back then, I was just over 5'3" at 12

years of age, and then I stopped growing. Tito took up training for bodybuilding and I followed him, having my first real workout with him when I was 11 at the Olympia Gym, Wakefield, which was a hardcore gym. There were a lot of bodybuilders and powerlifters in there, and Tito used to take me in there with him and show me what to do, watched over me, making sure I did everything properly.

STEP FOUR: GOING ONSTAGE, THE FIRST TIME

Tito had begun competing 1988 when I was 14. And he was dieting for the 1993 New England Championships. So I followed him around, doing everything he did. When he did cardio, I'd do cardio. Then a few weeks out he said, "You got to do this show with me" and I'm like, "Oh man." I thought it was a little weird, but I entered the teen division, aged 18 weighing 140 pounds. Going onstage in those little trunks, I was kind of nervous. I didn't really know how to pose but I had big arms and legs. I showed them off as much as possible, and the place went nuts and that's when I realized this is what I want to do. I enjoyed getting a response from people. I enjoyed the feeling of accomplishment of, "Wow, people really appreciate what I'm doing here." And you know for the first time, I thought this isn't a team sport; it wasn't like I had to rely on a quarterback to throw me the ball or anything like that. It was just me, and I couldn't blame anyone and I didn't have to give credit to anyone. I won the lightweight teen and the overall teen, while Tito was fourth in the full-blown middleweights.

STEP FIVE: GOING PRO, THE BIG DECISION

I won eligibility for an IFBB pro card on four occasions: 2001 NPC Nationals, lightweight (first); 2005 Nationals, welterweight (first); 2005 Team Universe, welterweight (first) and overall; 2007 NPC Nationals, middleweight (first).

At the 2001 Nationals, Branch Warren and Johnnie Jackson won the heavyweight and light heavy titles, respectively. They were huge, and I was tiny at 154 pounds. The top pros were massive, averaging like 260 pounds, and I felt that in the open class I would be blown away. I was still 26, still natural and figured I could grow and develop in the amateurs. There was no lighter pro division in those days like the 212s.

When I won my final pro card in 2007 as a middleweight, they had introduced the 210-pound pro class [which went to 202 and then 212] and I thought that's more reasonable, I'll turn pro and give it a shot. But I had to wait until 2009 because I broke my left leg in 2007, two weeks after becoming a pro, by falling down the stairs. Two thousand and eight was out for me, so I set my sights on the 2009 New York Pro. At the 2007 Nationals,

"I've been competing for 22 years, but I'm hungrier than ever. I don't even know why, it's just something inside of me that just feels I have more to give. I know I can keep improving."

I weighed in at 176 pounds and for the New York Pro debut I was 184 pounds, still natural and finished eighth. I looked good but everybody dwarfed me. It just really opened my eyes to the thought that if I'm going to play this game, then I got to play by the rules that everyone else was. I struggled with it for a while, thinking should I or shouldn't I? And then I just knew, I felt in my heart that if I did a little bit of gear, I could make improvements and be one of the best.

I was 34, had been competing for 16 years and experienced a full bodybuilding education. I had won every show there was to win, completely natural— now imagine if I add a little something? I just rationalized, "Why not give it a shot and see what happens." And so after placing eighth at the New York Pro, less than three months later I was 14 pounds heavier at 198 pounds and second at the Atlanta Pro— which qualified me to compete in the Olympia showdown, which then had a 202-pound limit and I finished sixth.

STEP SIX: DON'T MAKE THE BIG DECISION FAST

As far as going to the next level, I think you should be a man before you make "real man" decisions, as when you're dealing with your health it's a very important decision. I had learned how to train, how to eat properly and rest properly and recover, and do all the important meat-and-potato things in bodybuilding before I tried the stuff. I also think staying off until 34 played a role in enabling me to make improvements right up until now. By staying off the stuff for 16 years, I had maxed-out on my potential in the gym, so I was ready to take growing advantage of going to the next level.

But it was very difficult because I actually was a very proud natural bodybuilder. But the funny— maybe expected— thing was as I went on and grew as an amateur, more people began to think I couldn't make that progress and still be natural. They didn't believe me anyway, so part of me wanted to be like, "OK, you don't believe me? Watch what I look like when I do do it."

But I was concerned, because my brother never touched a thing, ever. I

didn't know how he would feel about it. I didn't know if he'd be disappointed in me and I didn't want to make him look bad, because you know how people would say, "See ... told you they were both doing it all along." But it got to the point where I decided, "You know what, I am 34 years old and I'm an adult and I can make my own decisions, and I'm done caring what everyone else thinks."

When I told Tito all he said to me was, "Just keep me in the loop because I don't want to worry about you. I want to know what's going on with your health. You're my brother; I'm not going to judge you."

STEP SEVEN: STAYING HUNGRY, STAYING HARDER

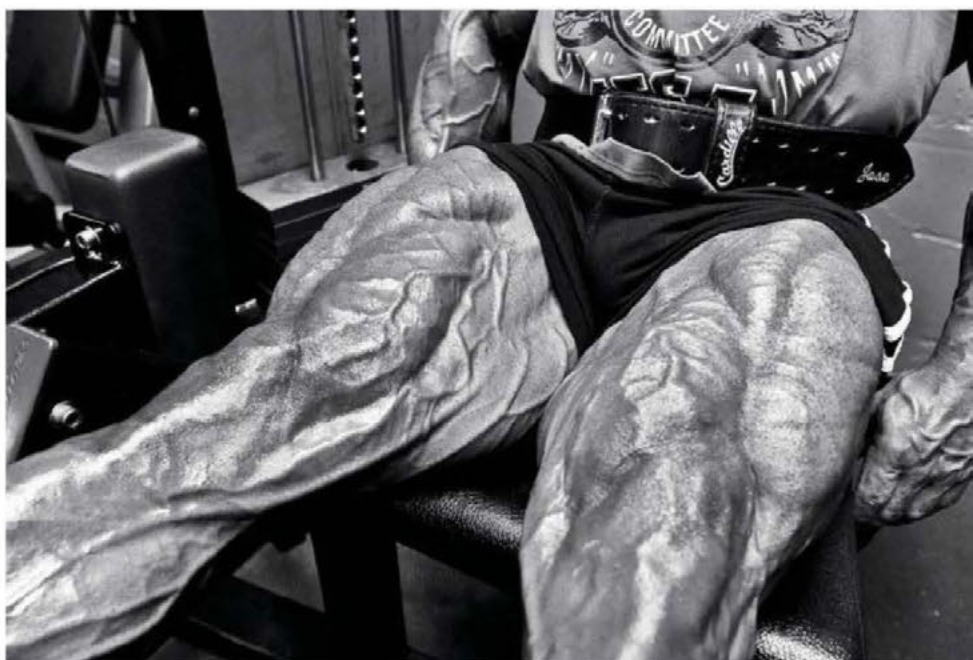
I've been competing for 22 years, but I'm hungrier than ever. I don't even know why, it's just something inside of me that just feels I have more to give. I know I can keep improving. Most guys wouldn't have been able to make the big improvements that I did going into the 2015 Arnold Classic at 40 years old. But my mindset was I have an opportunity of a lifetime, and I won't squander the opportunity. I don't want to be left thinking, "What if?" I want to know that I gave everything to be the best. And although most people don't agree

with me, I believe inside I have what it takes to be the best or I wouldn't do it. I wouldn't even waste my time. I would put all this energy into something else. But I do feel as amazing as Flex Lewis is, and to be honest I'm probably his biggest fan, I think I can beat him.

At the Arnold, people raved about my hardness, comparing it to the men's open where that look wasn't too common. Why is that so? I think they are not prepared to suffer or sacrifice. I just make the sacrifices and felt like a million bucks going into the contest. You have to ask yourself, "Am I willing to sacrifice the little things in the process of dieting? Am I willing to give up all those things and do only the things that are going to make me better?" That was something I've always been willing to do. I've always said that when it comes down to diet, I'm going to do only what it takes to get in shape. I love Dorian Yates and I love the things that he says. Like him, I always think I'm ready to go onstage two weeks out. You should be ready ahead of time so there are no last-minute tricks and I swear to God, I swear on anything you ask me to swear on, I did not use one diuretic for the Arnold Classic.

STEP EIGHT: SETTLING DOWN

I'm currently in an 18-month relationship with my girl Michela, and we will be taking the plunge very soon. I want to have a child. I get to see my brother and Amy with their kids, and I realize how happy they are and what an amazing thing it is to have a child. And to be honest with you, I think of my time as a child and I would like to somehow right





all the wrongs that were done to me. I've learned a lot in my upbringing about the simple things that are very important to a child that some people don't realize. Like just being there with them to read a book, go to a parent/teacher meeting, go watch them play baseball. All those things are hugely important, and I look forward to that opportunity to do that.

STEP NINE: BEATING FLEX LEWIS

As I said, I'm probably Flex's number one fan, but he's a human being and I've seen him untouchable and I've seen him very beatable. In last year's Olympia, he was very beatable. I honestly think

if I looked the way I did at the Arnold Classic and he looked the way he did at the Olympia, then I would have beaten him. He's kind of in a rock and a hard place right now, where he's right at the weight limit with no room to spare. He is maybe confined to bringing the same package, while I can still make a little bit of improvement.

Where he's beatable is front-to-back thickness. He's one of the widest guys in the entire division and that is a huge advantage to him. But when you turn him to the side, I'm probably the thickest guy from front to back. And when you look at him in a rear double

biceps, although it's crazy impressive because of all the detail, he doesn't have the lat thickness that I do, where my lats hang down. He's got the high lats, more of a Dennis Wolf type, and I'm just overall more muscular. It doesn't make mine a prettier physique. Flex flows a little better and he's got longer insertions, and so it's real pretty to look at but it's really a preferential thing. He's really well put together, he's complete, but I'm thicker and have more mass. And to be honest, I have a more mature hardness to me. But you know if either one of us comes in really off, the other one can win. But I'm confident I will be better at the Olympia. I was 209 at the Arnold, so have three extra pounds to play with.

STEP 10: JOSE AND MUSCULAR DEVELOPMENT

There was a lot of negative buzz on the boards when MD let me go. But I'm very thankful for my time with Steve Blechman and MD for the support and exposure that they've given me. I have no hard feelings whatsoever. I believe everything happens for a reason, so I'm very thankful for MD. And I'm very thankful for my sponsor, iForce Nutrition, through whom I've been able to see the world and gain new fans every day. I'm very thankful to the fans that believe in me, and the ones that don't believe in me—because either way, you're driving me.

It's exciting and an honor to be on this month's cover of MD. For a couple of years, so many people have been squeaking about, "Jose deserves a cover." But publishing is a business, and I don't consider myself a cover model by any means ... so I thought if I ever get on a cover, that's a huge honor. I just come back to what I said earlier—if you work hard and you're diligent enough, then you'll be deserving of something some day, eventually. And you know, having this cover underlines that my time is now. So thanks to Steve for giving me the honor of a cover.

STEP 11: THE ARNOLD CONNECTION

Being presented with the 2015 Arnold 212 trophy by the man himself was a dream come true, an ambition accomplished. As I accepted the trophy, I thought of the time I first met him, which he probably didn't remember, so I told him it onstage. I had just competed in the 1998 Musclemania in Redondo Beach, California and was disappointed with fifth in the lightweight class and was questioning my future in the sport.

The next morning, I was walking

along the Venice boardwalk when suddenly someone pulled up behind me on his bike. It was like 75 degrees, so I had my shirt off, and he said right away, "Looking good." I knew it was Arnold's voice and I'm like, "You got to be kidding me." So I turned ... it was him, and he was giving me thumbs-up as he rode by on his bike. He was with his wife and kids, and about five minutes later he turned around and stopped his bike right in front of me, gave me a handshake and said, "You look fantastic. What are you doing out here?" And I replied, "I just competed last night in the Musclemania ... I didn't do too well." So he asked me to start posing. He said, "Let me see a bicep." So I had a bottle of water in my hand and I showed him one arm and he said, "Come on, give me your water, give me front biceps." He started putting me through the poses. So I'm on the bike path posing, hitting the front double biceps, side chest, rear double bi— he's poking me, grabbing my elbows, lifting my elbows, he was like an excited kid and I was out of my mind. I probably posed harder than I ever did in my life. And you know, as quick as it happened, he turned around and said, "Good luck, keep up the great work and you look great." And he rode away.

This was before cellphone cameras or anything, so I never got a chance to capture that moment. All I could do was tell the story. That incident drove me and it inspired me and I said, "If Arnold thinks that I'm this great, then surely he sees something and I'm going to make it to the top." I believe in fate, I believe in you shouldn't do things unless you totally wholeheartedly believe it's possible. And it was like a mantra in my head; I'm going to meet Arnold and I'm going to tell him the story. And I'm going to do it onstage with him handing me that trophy. And it came true and it's pretty amazing. That was definitely my proudest moment, because it was a huge show and it was the biggest check I ever won and it was broadcast worldwide. It was just a magical moment 17 years in the making that I'll never forget the rest of my life. And the fact is I'm aiming to top it at the Olympia.

STEP 12: JOSE ON JOSE

I would say those who know me know I'm very loyal. I'm the kind of guy that if you've done right by me, then I'd go to the end of the earth for you. But the opposite is true too. I have that Clint Eastwood part of me as well; if you wrong me in the worst way, then I will go to the end of the earth to find you. I'm just a very passionate, loving

person. I love people and I always start off believing that people are inherently good until proven otherwise. I'm a very hardworking person, and that's what I've always been known for because I've had to be. I've had to work a little bit harder than everyone else. I mean, to play college football being 5'3' and ending up being the best player on the team when nobody wanted to give me a chance, tells you something about

my drive. I'm not here to exist. I'm here to excel. That's something that drives me in bodybuilding. I don't want to be just another bodybuilder. I want to be remembered as one of the best at what I did. Now I'll never compare to Ronnie Coleman or Dorian Yates but I have my own niche, and a story that deserves to be told and a spot in bodybuilding history that deserves to be remembered.

Postscript: At the end of our interview I asked Jose, "In the social media world, you see posts where somebody is moaning about a bad placing, a bad hairdo, and they describe it in terms of, 'This is hell, the worst day of my life.' Given your early life, you must almost laugh at these outpourings?"

His reply tells you all you need to know about what kind of man Jose Raymond is. "I sort of envy them, thinking I wish that's the worst I've been though. Those sorts of complaints may make me smile for a second, but then I stop myself and feel sympathy for them. Their hell may be different to mine, but it still feels like hell to them. So I don't look down on them. My hell, which was a lot worse than I'm disclosing in this feature, inspired me to be the person I am. I wouldn't want anyone to go through what Tito and I did. It was a dark existence, but together we saw the light, focused on that and came through. I've had a blessed life."

Bless you, Jose! ■



"It's exciting and an honor to be on this month's cover of MD. I just come back to what I said earlier— if you work hard and you're diligent enough, then you'll be deserving of something some day, eventually. And you know, having this cover underlines that my time is now. So thanks to Steve for giving me the honor of a cover."



PER BERNAL



10 TRAINING SECRETS OF THE PROS

Why do the pros look the way they do? It's a question just about all of us had at one time or another. Many mistakenly believe the answer lies in pharmaceutical assistance, yet there are many thousands of gym rats loaded to the gills with every drug known to man who look nothing like the pros. Genetics are certainly a heavily mitigating factor, truth be told. But beyond the DNA, the pros are also very different in how they approach their training. How so? Let me break it down for you!

By Ron Harris

GET JACKED



SECRET #1 **THERE ARE NO** **"MANDATORY" EXERCISES**

You could easily believe that there are certain exercises you "have to" do for each body part, or else be eternally doomed to suffer insufficient development. Many pros prove that it's just not true. Phil Heath has a pretty damn great back. His rear double biceps shot is arguably the very best in the world today, displaying a ruggedly thick back that appears to be a veritable mountain range of muscular lumps and ridges. We all know that you can't build a truly thick back without deadlifts. But here's a little secret—Phil doesn't do deadlifts and never has! Various forms of rows and pulldowns have built that incredible back. Dorian Yates never did a single barbell squat as a pro, yet his legs were good enough to win six Mr. Olympia titles along with nine other pro wins in a relatively brief seven-year career in the IFBB, thanks to leg presses, hack squats and Smith machine squats. The barbell bench press is certainly considered a mandatory exercise for chest training, yet many modern pros have abandoned it for safety reasons. Jay Cutler won four Mr. Olympia titles without any bench pressing, preferring the Smith machine and dumbbells. The point is, pros don't waste their time or take unnecessary risks with any exercise that they don't get results from and/or feel may lead to injury. And neither should you.

WHAT MATTERS MOST IS FEELING THE MUSCLE WORK AND GETTING A PUMP. WHATEVER IT TAKES TO ACHIEVE THAT FOR YOU IS WHAT YOU SHOULD DO REGARDLESS OF WHETHER OUTSIDE OBSERVERS APPROVE OR IF IT HAPPENS TO FALL INTO THE LINES OF PROPER FORM OR NOT.

SECRET #2 **THERE IS NO SUCH THING AS "PERFECT FORM" FOR ALL**

The "form police" are everywhere, and you only need to read comments under any YouTube clip of any bodybuilder training to hear their admonitions and scathing critiques. Pro bodybuilders are especially susceptible to their online diatribes about improper form, because many of them veer far from what is widely believed to be "correct" form. They may do their reps too fast, they may appear to involve other muscle groups and their range of motion is often not even close to full. If you aren't sure what I mean, do a YouTube search on any of the following men: Ronnie Coleman, Branch Warren, Juan Morel or Johnnie Jackson (or check the MD site's video archives). All of those men use what is ostensibly bad form—yet they all became freakishly massive, training that way with very heavy weights. By the same token, men like Dorian Yates, Dennis Wolf and Dexter Jackson, just to name a few, train with much stricter, more controlled form. All of these men use the type of form that they found worked best for them. In some cases that was strict, while in other cases it was almost sloppy. You can't know which type works better for you unless you give it a chance, and you might even find that a mix of both works best. But the pros all know, either outright or instinctively, that the concept of "perfect form" is a pretense. What matters most is feeling the muscle work and getting a pump. Whatever it takes to achieve that for you is what you should do, regardless of whether outside observers approve, or if it happens to fall into the lines of proper form or not.

GREGORY JAMES

SECRET #3

Volume Is an Individual Matter

There is a long history of high-volume training in the pantheons of pro bodybuilding. The great Arnold Schwarzenegger spent five hours a day split into a.m. and p.m. workouts, six days a week. The late Mr. America's Steve Michalik's "Intensity or Insanity" training system was based on as many as 100 sets per body part— you read that correctly. Ronnie Coleman won eight Mr. Olympia titles training for roughly two hours a day, six days a week, hitting each body part twice in that time. Both Juan Morel and Max Charles have been known to train for up to three hours at a shot. Then you have the other extremes. Dorian's workouts lasted about 45-60 minutes, with four training days a week and three complete rest days. Yates believed in just one all-out set per exercise after a few progressively heavier warm-ups. His Heavy Duty training predecessor, Mike Mentzer, did even less. Most pros these days are somewhere in the middle of those two ends of the volume scale. It's common to ask, how much should I be doing in the gym? Some people will quickly rattle off the accepted standard of x amount of sets per body part, x amount of time per workout and x number of workouts per week. The pros don't follow any set parameters on how often to train or how much training each body part should receive. They do as much as they need to, no more and no less. For some of them, that constitutes a lot more time in the gym than others. That certainly doesn't make any of them wrong, as each man found that a certain amount of volume gives him the best results, and doing either more or less isn't as effective.



SECRET #4

Your Body Will Tell You How Much Rest You Need

In addition to training volume, training frequency is another area in which the pros rarely conform to a standard paradigm. Most train five days a week, or will go for anywhere from two to four days before taking a day off. Yet it's not uncommon for some to go for periods of two or more weeks without taking a single day off from the gym. Jon De La Rosa saw some of his best mass gains as a pro between the 2013 and 2014 seasons doing that. And he's not unique in that aspect. While some pros do have a set schedule for when they will train and when they will take a rest day, it's far from unheard of for others to wait until they feel they need a break to stay home from the gym. They will also take extra rest days as needed, especially if they are starting to feel run down or are experiencing nagging aches and pains. Letting your body dictate how often to train actually makes a lot more sense than randomly assigning set training and rest days without respect to energy levels, sleep and nutrition or how your joints feel. The pros train as often as they feel is productive, and take rest days when they need to. This type of flexibility is more productive in the long run.

SECRET #5

Nobody Is Too Advanced for a Coach

Five-time Arnold Classic champion and former Mr. Olympia Dexter Jackson certainly knows how to train himself after more than 25 years of experience with the weights. Why would he need a coach? Simply put, nobody knows everything, and all of us fall into habits over time. We often tend to do the same exercises in the same order, the same way. It doesn't matter if you're a regular gym rat or a Mr. Olympia—we all fall into comfortable patterns of familiarity that typically lead to stagnation. Four years ago, Dexter knew he needed a change, and headed out west to work with the Trainer of Champions, Charles Glass. Glass introduced new exercises as well as plenty of new twists to old exercises, and Dexter's physique thrived on the changes. Hany Rambod has helped dozens of pro bodybuilders bring up lagging body parts by showing them new techniques and devising new routines to follow. John Meadows has gained notoriety in recent years for revamping the workout routines of pros like Fouad Abiad, Mark Dugdale and several others. Dante Trudel's DC Training has helped pros David Henry and Dusty Hanshaw pack on loads of fresh new muscle mass. And despite being the greatest 212-pound bodybuilder in the world for the last three years running, Flex Lewis has followed the Y3T Training System workouts designed by his coach, Neil Hill, for over 10 years. What I'm getting at is that few of us are able to objectively assess our training, and figure out what needs to change to see new gains. Seeking out help might seem like an ego blow to some of us, but many pros check their egos at the door when it comes to improving their physiques. If a good trainer or coach can help them become better bodybuilders, they don't hesitate to employ their services.

SECRET #6

Machines Build Muscle, Too!

Yet another "truism" we have all been fed for decades is that if you want to build size, free weights are the way to go. Machines definitely have their place as an adjunct to barbells and dumbbells, but your steady diet must consist of free-weight movements. If you flout this rule and make machines your main course rather than side dishes, you'll never get big. Oh really? Who is bigger than Mamdouh Elssbiay, aka Big Ramy? In a recent training feature on the current king of mass monsters in the IFBB, it was revealed that he uses almost all machines in his workouts. Yes, a man who supposedly tipped the scales at just 200 pounds five years ago and now crushes scales at an off-season 350 pounds did it with machines and cables. David Henry, a legend in the 212 division, uses tons of Hammer Strength machines for his chest and back—which are among the thickest in the sport, regardless of division. Just because some pros happen to rely far more on machines than free weights doesn't mean you should ditch your free-weight presses, rows, squats, etc. But it should indicate that machines are far more effective at stimulating muscle growth than most of us believe, especially if the weight is heavy enough and the effort is intense.

JUST BECAUSE SOME PROS HAPPEN TO RELY FAR MORE ON MACHINES THAN FREE WEIGHTS DOESN'T MEAN YOU SHOULD DITCH YOUR FREE WEIGHT PRESSES ROWS SQUATS ETC. BUT IT SHOULD INDICATE THAT MACHINES ARE FAR MORE EFFECTIVE AT STIMULATING MUSCLE GROWTH THAN MOST OF US BELIEVE.





SECRET #8

The Basics Will Always Work

Many bodybuilders are either under the impression that the basics are only for beginners to lay a foundation of size and strength, or else they rationalize it that way in order to avoid doing the toughest of all exercises: free-weight squats, deadlifts, bench presses, rows and military presses. If you have an injury or find you are not mechanically suited for one or more of them, that's a different story. But many bodybuilders transition to easier machine versions of those movements and feel that's how "advanced" pros train. Yet pros like Branch Warren, Victor Martinez, Jose Raymond and many others still hit the basic barbell movements hard on a regular basis, and continue to get results from them. Think about it. Branch Warren has a pair of the freakiest legs ever seen in our sport. Certainly he could be forgiven if he decided to stop squatting and use various machines to work his quads. Yet he continues to get under that bar every week. The pros have a common habit of sticking with what works for them— and in most cases, that means keeping the basics in their routines.


SECRET #7

Layoffs Do the Mind and Body Good

Most pros I have known, and this goes double for the ones who came to bodybuilding from other sports, are workhorses when it comes to training. Not only do they train longer and harder than the average gym rat, but they also tend to recover much better. Granted, it needs to be said that gear helps in that aspect, as does the lifestyle many of them lead, which allows for ample sleeping and eating. Yet even these men, who can tolerate more work, know enough to back off at certain times and take time off to fully recharge their minds and bodies, as well as give the joints, connective tissues and central nervous system a solid break. Ronnie Coleman was famous toward the final years of his Olympia reign for not touching a weight for a full three months after every Mr. Olympia contest. Jose Raymond, a superstar in the 212 division, religiously took eight weeks off after every Olympia competition, until the Arnold Classic added a 212 segment to their event. Dennis Wolf and many other pros schedule a few weeks for vacations and relaxation time at certain times every year as well. Yet the rest of us have a rough time staying out of the gym for more than a couple of days! Could we actually be doing ourselves a disservice by never taking layoffs? I believe time off from training, on the order of at least two weeks at a time and at least once a year, would only improve our progress in the long term, as crazy as it sounds to those of us who are pretty much addicted to the gym and feel guilty or anxious when we skip more than a couple of days of working out.



THIS PAGE: PER BERNAL



ONCE YOU HAVE BEEN TRAINING FOR A FEW YEARS ALREADY, THERE IS SIMPLY NO WAY YOU WILL CONTINUE TO STIMULATE MUSCLE GROWTH WITHOUT PUSHING PAST THE PAIN BARRIER AND GETTING THOSE "IMPOSSIBLE" REPS THAT COUNT THE MOST.

SECRET #9

Train Past the Pain Barrier

I have yet to meet a bodybuilder who doesn't think he trains hard. Many of us mistakenly believe we train as hard as we possibly can. Only if and when we happen to train with someone who actually does reach that peak of true all-out intensity do we realize we could definitely be training harder. Last summer, I had the privilege of training legs with Branch Warren when he came to Boston. That torturous experience, together with having had Dorian Yates put me through a leg workout at Temple Gym in 2010, showed me that I was not the super beast I had considered myself to be. I will say that I have trained with many pros, and not all of them train equally hard. But just about all of them do push past the pain barrier, and continue getting reps past the point where the garden-variety gym rat would have racked the bar or dropped the dumbbells. It's just like Arnold said, and I am paraphrasing. Once the pain becomes too much to bear, the reps beyond that are the ones that count, the ones that build muscle. No pain, no gain is not just a clichéd mantra. Once you have been training for a few years already, there is simply no way you will continue to stimulate muscle growth without pushing past the pain barrier and getting those "impossible" reps that count the most.

SECRET #10

There Are No Secrets!

Hey, if both the first and second rules of the Fight Club can be not to talk about the Fight Club, why can't the final training secret be that there are no rules? One major downfall of the Internet age of information is that with the vast glut of knowledge available with a couple of Google searches and clicks of the mouse, many bodybuilders are forever in search of the next best routine or training system. As a result, they never commit to any one way of training, as they fear something better is just around the corner waiting for them to discover it. The pros don't share this state of constant indecision and doubt. They aren't worried that there is some secret or perfect combination of exercises or techniques that will be their magic ticket to greatness. Instead, they work hard and have faith that their hard work in the gym will pay off. Not coincidentally, it does. Don't waste your life forever seeking out some elusive new workout routine. By all means keep trying out new things in the gym, but don't get caught up in worrying that you're forever missing out. Work your muscles hard, feed them and rest them, and you will build the best physique possible for you. As for looking like the pros, don't worry about that. They are all genetically blessed and predestined to become muscular gods among men. If they have any "secret," that's it in a nutshell. But by now it should also be clear that they do things differently than most other bodybuilders out there. Take some cues from their methods, and you will get jacked!

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Exercises That Built the Dominican Dominator

Pro training articles are certainly inspiring, but they aren't always particularly useful for the average reader. This isn't just because these astounding physical specimens are a different breed from the rest of us mere mortals, though that is true. One thing we often overlook is that the way a pro trains today is usually very different from how he trained when he was in the process of building the muscle mass you see today. Once that foundation of size is there, many pros get away from exercises they used in those critical formative years of lifting. It could be due to injuries, aches and pains, or it could be because they are now looking to detail and refine their existing mass rather than continue building. Yet what the average MD reader wants and needs is more mass. With that in mind, I spoke with IFBB veteran Victor Martinez to find out what he considered the most effective exercises that contributed to the physique that would go on to win six pro shows and counting, including both the Arnold Classic and Arnold Europe, and having been one of the most controversial Mr. Olympia runners-up in the history of that event. Here then, are the exercises that the Dominican Dominator feels were the most valuable of all.

BY RON HARRIS
PHOTOGRAPHY BY IAN SPANIER

A full-page photograph of a bodybuilder, Victor Martinez, performing an incline barbell press. He is lying on an incline bench, wearing a black tank top with orange trim and black shorts. His muscles are extremely defined and oiled, showing his chest, shoulders, and arms. He is holding a barbell with large black weight plates above his head, and his face shows intense effort. The background is a gym setting with various equipment.

1. INCLINE BARBELL PRESS

When it came to chest, I had assumed Victor would credit the venerable flat bench press as his all-time favorite and most productive exercise. He started doing it way back at home as a young teenager with a 110-pound weight set from Modell's Sporting Goods. In his early 20s, he actually took a two-year hiatus from bodybuilding and trained more like a powerlifter, even competing in several bench press meets. Eventually, he was able to handle 500 pounds for a few good reps.

The heavy weight was also responsible for a partial pec tear less than a month out from the 2006 Arnold Classic. Figuring it was better to quit while he was ahead, he hasn't flat benched in over nine years now. "The flat bench gave me most of the thickness I have in my pecs today, but it's just not a safe movement for me anymore," he explains. Since then, he has reconsidered its value, and came to the conclusion that the incline barbell press is actually a superior movement.

"Inclines give you better overall balanced development of the chest, with that nice shelf that spans from shoulder to shoulder in the front," he says. "That gives you an advantage in so many poses: the front lat spread, front double biceps and the crab most muscular," he notes.

He's done 405 many times in the past, though his broken arm a couple of years ago now limits his pressing strength. But Martínez still goes as heavy as he can on the incline barbell press, and as you can see from one glance at his dense pecs, they still get the job done.

**"THE
HARDEST
WAY OF
DOING AN
EXERCISE
IS ALMOST
ALWAYS
THE BEST
WAY."**



2. DEADLIFTS

At 42 years old and having learned from men who had been training hard since the 1960s and 1970s, Victor's training is very much old school. And it doesn't get any more old school and basic than deadlifts. In the aforementioned powerlifting phase of his career designed to beef him up from a light-heavyweight bodybuilder to a legit heavyweight, deadlifts played a crucial role in his workouts.

Martinez stopped the deads once he returned to bodybuilding, on the advice of older bodybuilders at his gym, but that didn't last long. "After a few months, I was checking out my back in the mirror and it just didn't look as thick as it used to. It looked like it had shrunk. I thought about how all the great bodybuilders with great backs have done deadlifts. It's the core exercise for a great back," he tells us.

When Vic does deadlifts, he doesn't do the half or rack deadlifts that have become trendy over the past few years. "I pull from the floor," he says. "I have always done them like that. The half range of motion doesn't feel right when I try it, and let's be real— they are easier. I think the hardest way of doing an exercise is almost always the best way."

Both of Vic's hands are overhand, and his knuckles out. "The over and under, mixed grip is really just for powerlifters, because they can't use straps in their meets," he clarifies. "Bodybuilders should have both palms facing down to distribute the weight evenly to both sides of the back."

Victor built his thick back and traps by pulling 495 for good sets of 10 at many workouts over the years, and often going up to 585 for a few reps. "Back in high school, me and a few friends used to have deadlift sessions after school, where we would do tons and tons of sets of deads off a box," he recalls. "You just can't beat it for overall mass and power."



"YOU JUST CAN'T BEAT [DEADLIFTS] FOR OVERALL MASS AND POWER."

3. BARBELL ROWS

Victor named more exercises for back in this list of his essentials than any other body part, but that makes a lot of sense when you consider it's the largest and most complex muscle group in the body. "Barbell rows give your back that thickness so it isn't two-dimensional like a piece of paper," he notes.

Vic was inspired to add these into his home workout regimen after seeing photos of the great Lee Haney doing them. Haney did them standing on a bench to allow for the best stretch, as the 45-pound plates wouldn't hit the floor; so that's how Victor did them too. "Unfortunately, all I had to go on was a couple of pictures in a magazine," he explains. "I missed the episode of Lee's workout show where he told you how to do them right, to make sure you kept a slight arch in your back and tightened up your core." As a result, barbell rows led to Victor's very first training injury, as he strained his lower back. When the pain wasn't going away after a week, he paid a visit to the family doctor. "He told me to stop working out." Later, he would master barbell rows doing them off a box/platform at Elmo's Gym. "One time a kid tried doing them off a plastic milk crate, and the thing collapsed in the middle of his set," he recalls.



"BARBELL ROWS GIVE YOUR BACK THAT THICKNESS SO IT ISN'T TWO-DIMENSIONAL LIKE A PIECE OF PAPER."

A full-page background image of a very muscular man, seen from behind, performing chin-ups on a pull-up bar. He is wearing black shorts and white sneakers. His back muscles are extremely defined and oiled, showing a wide range of muscle fibers. The gym setting includes a red wall and metal equipment.

4. CHIN-UPS

Longtime MD readers know that Victor was doing endless chin-ups in a doorway of his apartment before he even lifted his first weight (working up to being able to do more than 50 reps at a pop), and has kept doing them even well into his pro bodybuilding career. Nowadays, he does them first in his back routine, but considers them more of a vital warm-up rather than an actual exercise.

"I think chin-ups are the best possible way to warm up everything you will be using for your back workout: the lats, the biceps, the rear delts," he comments. Because it's a warm-up, he doesn't add any weight. Then again, most of the year he hovers around 275 pounds at 5'9", which is a lot of resistance to pull in the first place.

Vic starts off with wide-grip chins, aiming for three sets of 12. These are not the bouncing, jerky movements many guys consider a chin-up, either. He starts every rep from a dead hang, letting the lats stretch, then pulls up until his upper chest hits the bar, squeezing the lats for a second before lowering slowly. Vic usually will follow that up with two or three sets of close-grip chins, using an underhand curl grip.



5. OVERHEAD PRESS

Barbell or dumbbell presses are a must to develop overall shoulder mass, and Martinez has done more than his share from the start. The standing barbell press is an old-school staple that few modern bodybuilders have even attempted, but they were a mainstay for Vic back in his days at Elmo's Gym. "That's because they didn't have a seated bench with a rack there to do military presses," he tells us.

Whether you sit or stand, or use dumbbells or a bar, Martinez stresses that overhead pressing is a mandatory move if melon delts are what you seek. He does add that although he didn't put dumbbell lateral raises on this list, he still considers them a must. "Presses are important, but if you never do side and rear laterals, chances are you'll have good front delts, but only average side and rear delts, like a lot of guys out there do." There was even a time when Victor wasn't satisfied with his shoulder development, and would add a few sets of side laterals after each chest workout.

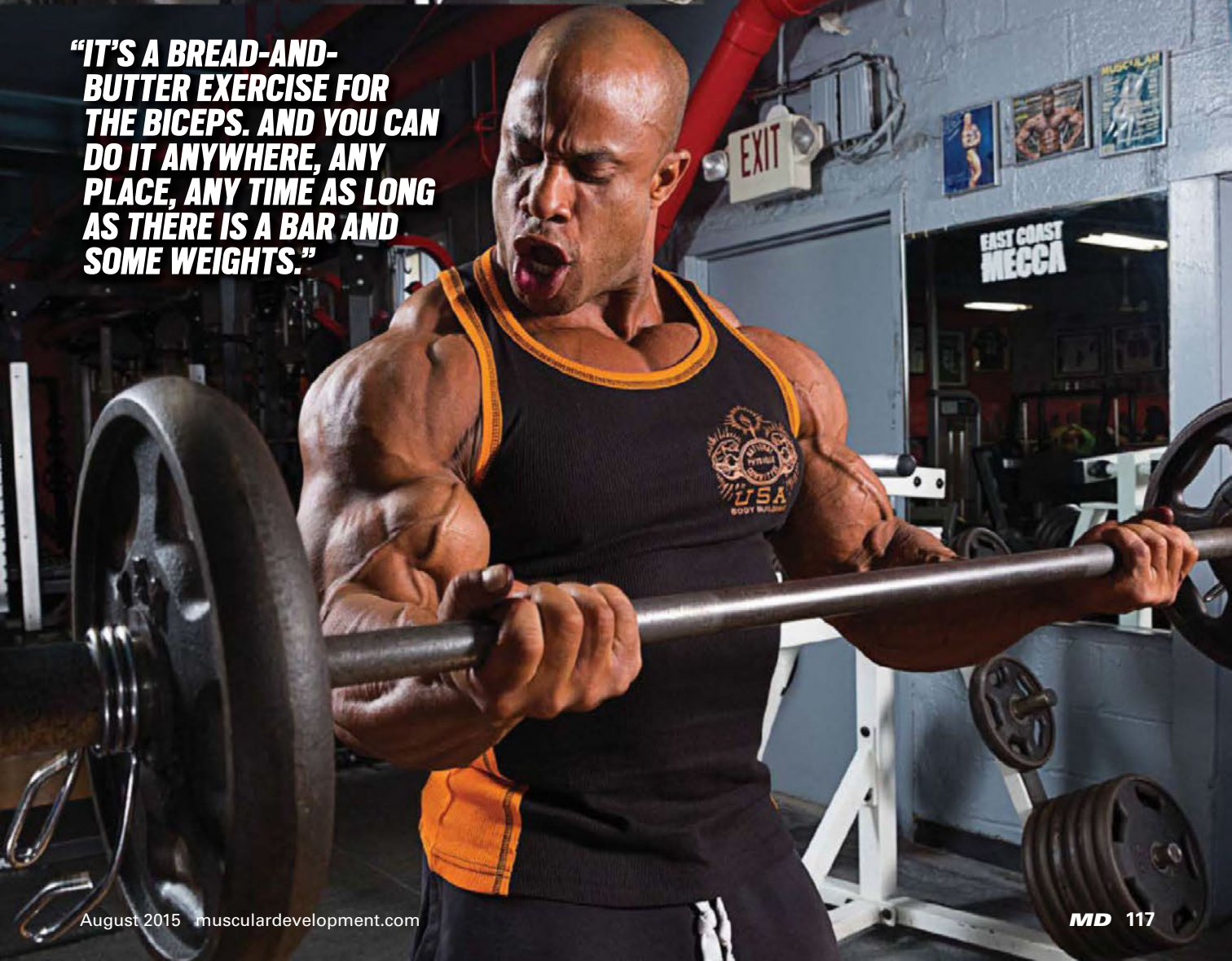


6. BARBELL CURLS

The barbell curl has long been held in a position of high esteem for bodybuilders, and Victor shares that sentiment. "It's a bread-and-butter exercise for the biceps," he begins. "And you can do it anywhere, any place, any time as long as there is a bar and some weights."

The standard barbell curl allows for maximum resistance, which translates to maximum mass for the biceps, certainly a showpiece body part for Victor. "You just have to make sure you aren't swinging the bar up using other muscles, and make the biceps do the work," he says.

Vic was quick to give honorable mention to preacher curls, both the standard type using a bar and a preacher bench, or a variation he often prefers, using a single dumbbell while standing and supporting the working arm on a steeply inclined bench. "Because you got that pad keeping you from moving, it's a lot harder to cheat. The biceps do all the work." But as with standing barbell curls, you still need to be careful with your form. "Don't lean forward too much and let your front delts take over, and don't rock back and forth just to heave up a lot of weight."



"IT'S A BREAD-AND-BUTTER EXERCISE FOR THE BICEPS. AND YOU CAN DO IT ANYWHERE, ANY PLACE, ANY TIME AS LONG AS THERE IS A BAR AND SOME WEIGHTS."

7. SQUATS

Victor is in agreement with the majority of not only bodybuilders, but anyone who has ever trained seriously with weights, as to the importance of squats. "If you don't squat, you ain't got squat for legs," he jokes.

Mastering form on squats was something that took him years. "Again, I missed the Lee Haney episode where he showed you how to do them right," he mentions. "I did see Cory Everson squatting on 'Bodyshaping,' but I assumed she was demonstrating the way women should do them." An older guy he trained with was his role model for form, which turned out to be disastrous. "He was older, but he wasn't wiser — his form sucked." That led to Victor suffering yet another training injury, a partial meniscus tear at only 18 years old.

After avoiding squats for a while, Victor returned to them and finally found the "right groove" that gave him results and didn't hurt his knees or lower back. He found squats so productive that he often did — and still does — as many as 10 sets of them in a given leg workout. As far as reps, Victor has found 10-12 to be his sweet spot. You'll never see him do fewer than eight, but he will do sets in the 15-20 range. "Those kill your legs, but man do they work."

**"[SQUATS] KILL YOUR LEGS,
BUT MAN DO THEY WORK."**

A large, muscular man with a shaved head is performing dips on a parallel bar in a gym. He is shown from the side, with his back to the camera, highlighting his extremely developed triceps and back muscles. The background is a dark gym with various pieces of equipment.

8. DIPS

Just as with pull-ups, Victor fell in love with dips long before he touched his first weight. He even held the record at George Washington High School with 42 consecutive dips, and spent many late nights in his kitchen dipping between two chairs to pack muscle on to his chest and triceps. At one time, Victor was able to do a few good reps on the parallel bar dips with four 45-pound plates, or an added 180 pounds of resistance, hanging from a belt. "Those days are long gone," he reminisces, "but I would not have the mass in my triceps I do today if I hadn't paid my dues with a ton of weighted dips."

He does caution that one needs to take care with dips. "If you lower yourself too far down trying to get a crazy deep stretch for your chest, you will wreck your shoulder joints sooner or later." Martinez actually feels that dipping between two benches with plates piled on your lap is both safer and gives the triceps a more direct hit. "It's just awkward, because you have all those plates sliding around on you—be very careful or else you might hurt a very vital area!"

There you have it, eight exercises that helped forge the physique of Victor Martinez, one of the best bodybuilders of his generation. It's safe to say that if they worked for him, they can work for you too.

"I WOULD NOT HAVE THE MASS IN MY TRICEPS I DO TODAY IF I HADN'T PAID MY DUES WITH A TON OF WEIGHTED DIPS."



VICTOR MARTINEZ'S MUSCLE-BUILDING MHP SUPPLEMENTS

Morning	ACTIVITE SPORT multivitamin with breakfast T-BOMB 3Xtreme testosterone booster MYO-X myostatin inhibitor DREN fat burner
Mid-Morning	Power Pak Pudding high-protein pudding
Pre-Workout	DARK RAGE pre-workout NO-BOMB nitric oxide booster
Intra-Workout	BCAA 10X ENERGY
Post-Workout	DARK MATTER post-workout (before final six-week prep) DARK MATTER ZERO CARB CONCENTRATE post-workout (final six weeks) GLUTAMINE-SR sustained release glutamine
Evening	ACTIVITE SPORT multivitamin (2) with dinner T-BOMB 3Xtreme testosterone booster
Bedtime	PROBOLIC-SR sustained release protein 5D-TROPIN nighttime anabolic activator

WHAT A FREAKIN' CHEST!

Pec Smashing With Alexis Rivera Rolón, 2014 NPC National Champion

Back in the April issue, we introduced you to Alexis Rivera Rolón, the very first NPC Nationals Overall Champion from outside the 50 states of the USA. Hailing from Bayamón, Puerto Rico, he stunned the audience and judges alike with a combination of mass, shape and stellar condition to sweep that event last fall. Rolón has a few standout body parts, and his thick chest is definitely one of them. With a little help from a translator, I spoke with this brand-new IFBB pro about his chest training: how it started, how it evolved and his tips on some of his favorite exercises. Read on, and you too might be able to build a great freakin' chest like this Freakin Rican!

What was your early chest training like? What exercises did you focus on?

I have to admit that in my early days of lifting weights, I was far from consistent. I wasn't one of those guys who became obsessed with lifting from day one, and had to work out all the time. Bodyboarding, or what a lot of Americans call boogie boarding, was still my main hobby. If the waves were good, I would head to the beach. Only if they were small, would I lift weights instead. That averaged out to two or three times a week. My workouts were very short





BY RON HARRIS
PHOTOGRAPHY BY JASON BREEZE



FLAT BARBELL BENCH PRESS

Barra plana press de banca

"Most of the time, I start with a standard grip that's just outside of shoulder width. As I add weight over the sets, I start closing my grip in a bit more each time, so it winds up being maybe a little closer than shoulder width by my final, heaviest set. The reason I do this is because I suffered an injury to my left shoulder years ago, and found that I can't do heavy barbell presses with a wider grip safely anymore. The last thing I want to do is hurt my shoulder again, because that impacts just about everything you do in the gym. Plus, it's good to vary your grip width on exercises anyway. You hit the muscle from slightly different angles and stimulate more growth."

My chest training has changed in several ways. First, I use a wider variety of rep ranges now than I did years ago. When I was starting out, I did eight to 10 reps almost all the time for everything. Eventually I tried going a bit higher on the reps, as in 12 or even more, and found I was able to get a better connection with my pecs and also get better pumps. You do need heavy sets for six to eight reps for that muscle thickness and density, but you also need to do those sets of 12 or more reps to tap into each and every muscle fiber.

Learning how to have a powerful mind-muscle connection to the pectorals also took time. When I started training, I was only thinking about lifting the weight. Over time, I learned to think about each rep as contracting and stretching the muscle. I also started paying attention to details like my breathing, making sure I inhaled as I would lower the bar or dumbbells, and exhaled with the effort. That actually made a big difference. I stopped worrying so much about how much weight I was using and focused more on the feeling I was getting in the muscle itself. If I couldn't feel the chest working and wasn't getting a pump, I realized it didn't matter how strong I was. That's the difference between training like a bodybuilder versus all the other guys in gyms who lift weights.

As time went by, I also began learning about and incorporating intensity techniques like drop sets to work the muscle even harder. Really, it was just a process of paying

and basic back then. For chest, I did mostly push-ups, flat bench presses and flat bench dumbbell flies.

Did you have any pro bodybuilders that you looked up to for inspiration because they had excellent chest development?

My favorite bodybuilder who inspired me the most was Flex Wheeler, but when it came to chest, Arnold was the man. Even though Arnold had been retired for many years by the time I started looking at the magazines, they still used to feature plenty of training and posing pictures of Arnold, and they still do, even today! He had the craziest, thickest and fullest chest ever. I really don't think anyone since then has built a better chest than his. So when I started getting a little more serious about lifting and decided I wanted to be a bodybuilder, it was Arnold's chest that I would envision for

myself to have one day. I am still trying!

Did your chest grow easily, or was it more of a challenge to make it grow?

Thankfully I was born with good genetics for bodybuilding. I can't deny that. Even when I had been training only for a few months and like I said, only for two or three days a week, I already looked better than many guys in the gym who had been lifting and trying to get big for years. But even so, nothing has come very easily for me. I worked hard with very little in the way of financial resources to build every ounce of muscle that I have. Good food and supplements are not cheap! All that being said, my chest always responded as long as I worked it hard. It was never a weak area compared to everything else.

In what ways has your chest training changed over the years, from the time you started until now?



TRAINING SPLIT

Day 1: Chest
Day 2: Quads and calves
Day 3: Biceps, triceps and abs
Day 4: OFF
Day 5: Delts and traps
Day 6: Hams and calves
Day 7: Back
Day 8: OFF, repeat

ALEXIS' CHEST WORKOUT

Incline Flyes 4 x 20, 16, 12, 10
Incline Barbell Press 3 x 16, 12, 8, 8/8/8*
Flat Dumbbell Press 3 x 12, 8, 6
Decline Barbell Press 3 x 12, 8, 6
Dumbbell Pullovers 3 x 10-12

or
Wide-grip Dips 3 x failure

**Final set of incline barbell press is a double drop set of eight reps, eight reps and a final eight reps, for a total of 24.*

INCLINE BARBELL BENCH PRESS

Barra Incline prensa

"One thing I like to do on incline presses in general is to do some sets with the more standard angle of about 30 degrees, and set the bench to a steeper angle of around 45 degrees for others. Some people say it's all front delts when you have the bench set that high, but I am able to feel it right under the clavicles in the uppermost part of the pecs. And even if it's true that my front delts might be working hard on those steep inclines, that's OK in my case. I need bigger shoulders!"

attention to what I was doing and what type of results I was getting. I experimented with different techniques, and so on, and would continue doing things that I saw that were working. If anything I did wasn't giving me results, I stopped doing it.

What are some reasons you think many bodybuilders don't see good results from their chest training? What do you think they are doing incorrectly?

There can be several reasons to look at. First off, a lot of guys do the same exact workout all the time, even though they aren't growing or improving. Why wouldn't you try changing the exercises, the rep range, the order you do the exercises or how fast or slow you perform the reps? But most guys just never think to do that. They



INCLINE DUMBBELL PRESS

Incline la pesa de gimnasia de prensa

"Inclines are a staple in my chest workouts, but I like to alternate using barbells or dumbbells for them from week to week. The bar allows for maximum weight and power for the upper chest, but I am able to control the movement and the contractions better with dumbbells. I think all bodybuilders should use both in their training at different times for the best results."

expect that eventually, their chest will just start growing, but it doesn't.

Some people train their chest with too many exercises and too many sets, while some don't do enough. I think with chest, doing too much is more common. You really shouldn't need more than four or five exercises for three or four work sets. The chest isn't that complicated, the way an area like the back is.

Nutrition is where most guys go wrong in general. They think just training hard in the gym is good enough, and they don't make an effort to feed their body with all the nutrients it needs. It's a lot of work to eat quality protein and carbs every two to three hours, but that's what it takes if you want to have a physique that stands out.

Finally, many guys overtrain. They work out every day for two hours or more, and don't take rest days often enough. They train body parts like chest and arms too often, before they have time to recover properly. If you're feeling tired and run-down, there is no way you are recovering adequately. Your chest won't grow. Nothing will!

Are you happy with your chest right now? If not, what do you want to improve?

I'm happy with my chest right now, at least for the fact that it's not an area that I feel I need to concentrate

FLAT DUMBBELL BENCH PRESS

Mancuerna plana press de banca

"This is one of my favorite movements to go heavy on, as in 150-180 pounds in each hand. I like to pyramid up in weight and only do three sets, finishing off with the heaviest dumbbells I can press that day for six reps. Obviously, I am stronger sometimes than others. But this is just about equal to the flat barbell bench press, in my opinion, as far as developing overall mass to the chest."



INCLINE DUMBBELL FLYES

Incline mancuerna flye

"This is an exercise I know many bodybuilders do later on in their chest workouts, and that's fine. But for me, I find I get the most benefits when I use it as the first exercise before I start off with an incline press of some type. It stretches the pecs and helps bring blood to them as well. It's a good warm-up for the area, and when I do them first, I am always able to feel the upper chest working better when I do my presses afterward."

DUMBBELL PULLOVERS ACROSS BENCH

Pullover mancuerna través banco

"I have always liked this exercise, and I never understood why more bodybuilders don't do it. When I do it, I lie across a bench so that it's under my mid-back. I let my upper body hang over the other side, and let the dumbbell come down way past my head. Not only do I feel the pecs stretching, but my rib cage too. I'm really not sure that pullovers contribute directly to mass in the chest, but I do believe that stretching the muscles in general does help you grow."



PUSH-UPS OFF BENCH

Flexiones off banco

"Push-ups are very easy for bodybuilders. For that reason, I only recommend doing them at two times: at the very beginning as part of a warm-up for the workout, or at the very end to finish the chest off with a crazy pump."

on because it lags. I know it's pretty good. But there is always something to improve. I look at both my upper and lower chest, and I know they can and should be a little thicker. Basically, I just need overall mass right now. I was big enough to win the best amateur contest in the USA, but the IFBB is a whole other level.

How is your off-season going so far? What is your current bodyweight, and where do you see the most improvements in your physique?

I took some time off and trained easier for a while after I won the NPC Nationals, because I know my body would need to be fully rested for what I had in mind in terms of the improvements I need to make. As we are speaking right now in May, I am only six weeks into my first official off-season as a pro—while I start building that size that I know I need to get up there with those amazing pros I have looked up to and followed in the magazines and online. I have already hit a new all-time high bodyweight of 270 pounds, and I feel great at this weight. The areas I am focusing the most on are my back and shoulders. Once those match everything else, I feel I will be ready to compare to the other pros. I still have a lot of work to do until then, but I am very excited and extremely motivated! There hasn't been a good IFBB pro from Puerto Rico in the open class in a long time, and I really want to make my island proud.



CABLE CROSSOVERS

Cruces de cables

"Most of the time, if I am doing cable crossovers, it's to finish off the chest workout. The weight I use is moderate. There is no point in going very heavy on crossovers. My reps are actually more like 20-25, and I do them slowly with a good squeeze of the pecs at the conclusion of each rep. One thing you need to be mindful of, not only on this but even more so with any type of dumbbell flye, is to avoid going into an extreme stretch at the start of the rep. You do want to open up the chest and get a nice stretch, but going too far can hurt your shoulders. You usually don't even think of flye movements as being something you can get hurt on, but you sure can."

"NOTHING HAS COME VERY EASILY FOR ME. I WORKED HARD WITH VERY LITTLE IN THE WAY OF FINANCIAL RESOURCES TO BUILD EVERY OUNCE OF MUSCLE THAT I HAVE."

ALEXIS RIVERA ROLÓN'S PROSUPPS SUPPLEMENT ROUTINE

UPON WAKING

1 scoop of PSWhey
1 scoop of ProSupps Glutamine 1000
1 scoop of ProSupps AminoLinx

AFTER MEAL 1

4 capsules of ProSupps Fenumass

AFTER MEAL 2

1 capsule of ProSupps I-Load
1 scoop of ProSupps Karbolic

PRE-WORKOUT (15 minutes prior to workout)

1 scoop of ProSupps Mr. Hyde
1 scoop of Glutamine 1000

POST-WORKOUT

1 scoop of PS Isolate
1 scoop of ProSupps Karbolic
1 scoop of ProSupps AminoLinx
1 serving of ProSupps L-Carnitine 1500

BEDTIME

1 capsule of ProSupps Crash
1 scoop of ProSupps Glutamine 1000

For more information, visit www.prosupps.com.

CONTEST HISTORY

2010 Mr. Puerto Rico	Novice Winner
2010 Unique Fitness Classic	Fourth, Heavyweights
2011 Copa Alcalde	Heavyweight and Overall Champion
2011 Unique Fitness Classic	Heavyweight and Overall Champion
2011 Mr. Puerto Rico	Heavyweight and Overall Champion
2011 NPC Southeastern USA	Novice Overall, Heavyweight and Overall
2011 NPC Nationals	11 th , Heavyweights
2012 NPC Nationals	11 th , Heavyweights
2013 NPC Garden State	Heavyweight and Overall Champion
2014 NPC Nationals	Super Heavyweight and Overall Champion

Facebook: Alexis "Freakin-Rican" Rolón IFBB Pro
IG: @ifbbfreakin_rican

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WARREN PEACE



By Dan Solomon • Photography by Jason Breeze

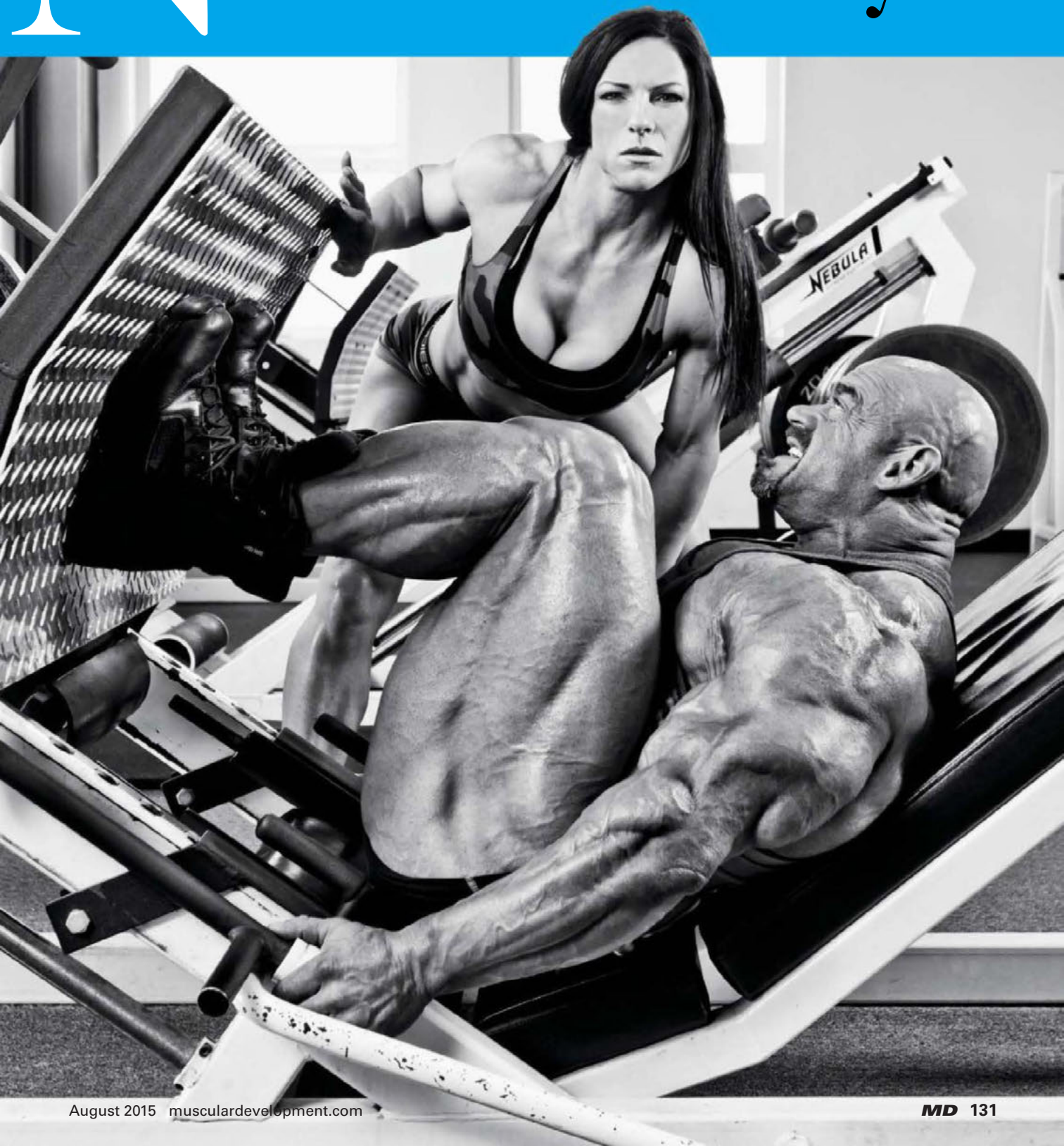
The bodybuilder is the rarest of athletes, a breed of men and women seeking physical transformation at the expense of the more conventional aspects of life. But every so often, in a sea of stereotypes, an even rarer kind of bodybuilder will emerge, the kind who manages to achieve unimaginable success, while still maintaining a **balanced** life ... one built on achievements that go beyond the gym, far beyond the stage. In an industry crowded with failed marriages and one-dimensional achievers, the story of Branch and Trish Warren is a reminder that balance is obtainable—a multifaceted existence, complete with the riches of family and the kind of professional conquests that aren't earned in a gym.

Branch's success has been well documented. He's won nearly everything a bodybuilder can win. A two-time winner of the Arnold Classic and a former Olympia runner-up, the 40-year-old Texan has quietly ascended as one of the most accomplished bodybuilders of his generation. He's also regarded as one of the hardest working guys in the business. While many of his peers focus mostly on their next trip to the gym and their next endorsement deal, Branch maintains a broader view of life. Together with his wife Trish Warren, an accomplished IFBB pro Fitness star, the two have built a balanced life, complete with a thriving logistics company, and their most prized possession, a beautiful 3-year-old daughter.

Known mostly as a soft-spoken, blue-collar workhorse, Branch values his privacy, seldom revealing the man behind all of that jaw-dropping muscle. In this exclusive MD interview, Branch comes clean about his unyielding love for the lady he calls his “*calm within the storm*.” He opens up about the people he describes as “fake” and he reveals his greatest moment as a bodybuilder. Branch has been doing quarter-turns for more than two decades, but you're about to see a side of him that few have ever witnessed.



N A Love Story





“I don’t feel I get the respect I deserve from the critics and self-proclaimed experts in our industry. I’ve proven them wrong every single time they write me off. But I really don’t give a damn what they think.”

Dan: How did you and Trish meet?

Branch: I met Trish when she was 19. She joined the Southlake Training Center where I worked as a trainer. I remember my friend Brad telling me, “You have to see this new chick that just joined the gym, she’s hot!” I peeked in on her doing cardio and introduced myself. I think she was half scared of me (Branch laughs). I told her, “You know you’re gonna be my wife someday” and she just laughed and told me I was crazy. As you know, I’m not a quitter and finally, after chasing her for six years, I finally got her to go out with me. I knew from the first day I met her that she was the one for me. She’s a small-town country girl, very driven, beautiful, smart and classy. You don’t find all of those qualities in girls these days. I knew if I ever got her to go out with me that I would never let her go! We were married shortly after we began dating and we now have a beautiful little girl, Faith.

Dan: Can you tell me a little about the business that you and Trish own? I’ve heard you’re very successful outside of bodybuilding.

Branch: We both experienced hard financial times growing up, and we knew at an early age that if you’re willing to work hard, you can overcome hard times and be successful. That’s what makes us mesh so well with each other. It’s become the foundation of our success. In 2006, shortly after I placed second at my first Arnold Classic, we used my prize money to invest in our company, **Maximum Logistics**. We both saw the earning potential within this industry, and Trish had a great deal of knowledge and existing relationships that were more than happy to help



us with our new business. We worked hard to establish agents worldwide, setting up accounts with all the major transportation carriers. We then went to work bringing on new accounts, one by one. Like any successful business owner knows, it’s a marathon not a sprint— and building solid relationships is the key!

Dan: Your résumé is remarkable. Do you feel like you get the respect you deserve?

Branch: No, I don’t feel I get the respect I deserve from the critics and self-proclaimed experts in our industry. I’ve proven them wrong every single time they write me off. But I really don’t give a damn what they think. The fans have given me so much respect and admiration. That’s what really matters to me. I’m blessed with the best fans in the world.

Dan: What’s your least favorite part of the bodybuilding industry?

Branch: All the “fake” people! The ones that want to jump on your bandwagon when you’re doing well, but as soon as you slip a few spots, they’re nowhere to be found. Loyalty seems to be a rare commodity these days. I have and always will be a man of my word, even if it means that I miss out on making a few extra bucks!

Dan: Of all your injuries, and there have been many, which was the hardest to overcome?

Branch: Winning my second Arnold Classic after tearing my quad off the bone was the biggest moment of my pro career. No one believed I could come back. The few that did think I would overcome it, could not have predicted a second Arnold victory in only six and a half months. My



TRISH WARREN: Proud to Be Branch's Wife

This interview wouldn't be complete without sharing what Trish had to say about her adoring husband:

"Branch inspires me with his continued dedication to the sport of bodybuilding. I have never known anyone more disciplined than he is. Branch is a machine, and once he sets his mind to doing something, he gives 110 percent until he gets it done. It amazes me that he continues to push his body to a higher level, after all the setbacks he's had to overcome. I was in awe of him this past Arnold Classic. I couldn't take my eyes off of him ... he was perfect! I love what Branch represents— no excuses, just hard work and consistency to reach his goals. I'm so proud to be his wife, and I love the father and the man that he has become." —Trish Warren



PHOTOS COURTESY OF BRANCH AND TRISH WARREN

wife believed in me, and so did Brian Dobson. Through my faith and God's grace, I summoned the inner strength to make it happen. Hardest six months of my life. I lived in constant pain. I guess that's what made that second Arnold victory so special. After that show, I believed I could achieve anything I put my mind to.

Dan: What are some of the challenges of being married to another pro athlete?

Branch: As a pro bodybuilder, we are self-centered and usually think of ourselves first. That is a recipe for disaster in a marriage. Now, try putting two pro athletes, married, living together. No one would think we'd have

a snowball's chance in hell. It works because Trish is the most beautiful, unselfish and giving woman I know. Bodybuilding is important, but one day it will end. When it does, we will have a lot of life left to live. You have to keep your priorities in order ... God, family and bodybuilding. That's how we make it work.

Dan: Tell us why your relationship has succeeded, while so many others have failed.

Branch: My marriage has survived because we put our faith in God and family first and second. Everything else, including bodybuilding, comes after that. You can't get caught up in the fame and success. Too many times, guys let





it go to their heads and when it all comes crashing down, there isn't anyone around. You have to stay grounded and keep it real. So when it all ends, we still have each other.

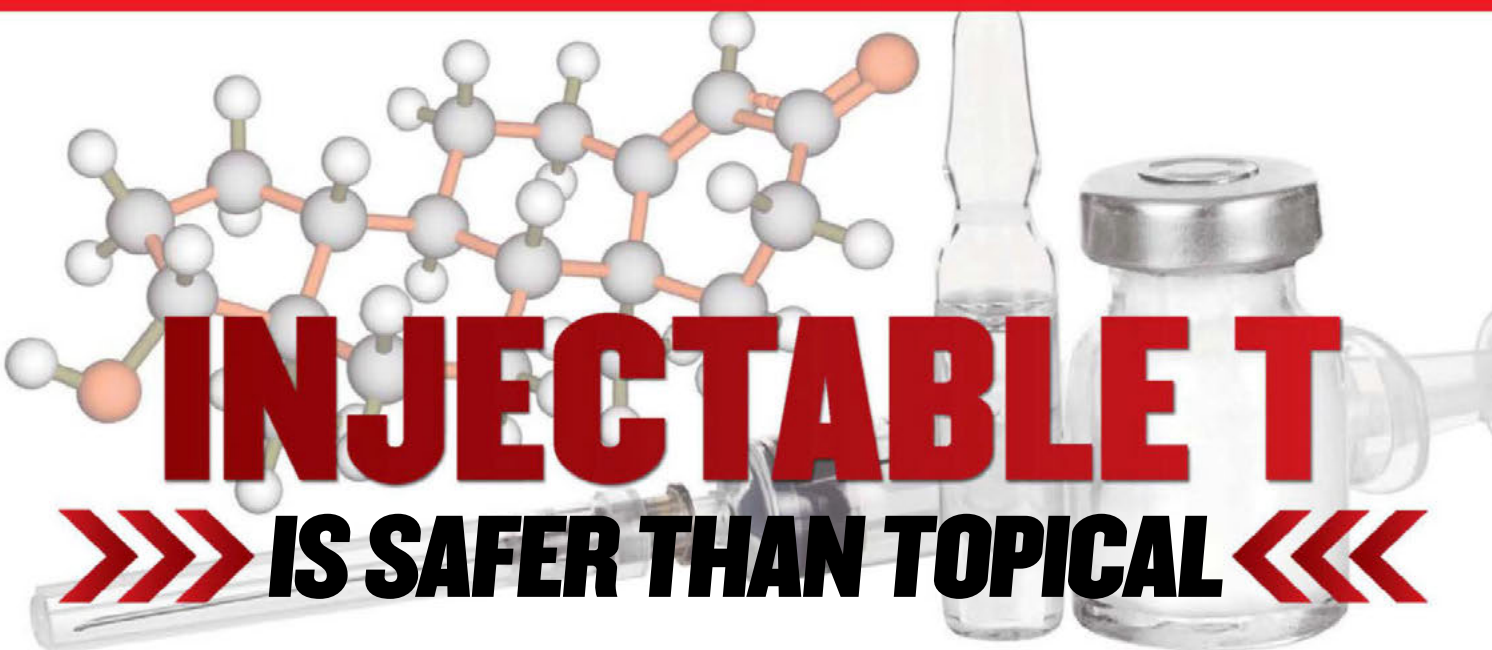
Dan: How much longer can you continue competing?

Branch: I turned 40 earlier this year. When people ask how much longer I'm going to keep competing, my answer is as long as I'm healthy, having fun and still one of the top guys. When I retire, it's going to be on my terms.

Dan: Describe the role that Trish has played in your success.

Branch: Trish is my calm within the storm. No matter what I'm going through, I have peace knowing that she will always be there waiting for me. Everyone thinks that bodybuilding is an individual sport, but I wouldn't have had this much success without her. I thank God every day for giving me a woman that I love more and more each day. She's my best friend, lover and soul mate. ■





Pharmaceutical boards shout “blasphemy!” as they invest millions into lobbying government to erect barriers of entry against competitors ... make that research and development to provide a safer and more effective means of treating men suffering from symptomatic testosterone deficiency. The earliest forms of androgens were unmodified metabolites extracted from urine, and finally testosterone itself, injected to provide a short burst of increased androgen exposure that was rapidly cleared. Chemists realized they would need to modify the chemical structure of the androgens to survive metabolic clearance, so they initially alkylated the anabolic-androgenic steroids (AAS) at the C17 position of the molecule. This allowed AAS to be taken orally, and provide a sustained effect for roughly a day. However, it became evident that this form of modification (17alpha-alkylation) causes toxic effects to the liver in many. Finally, long-acting injectable versions of AAS were developed that esterified varying length fatty acids, again to the C17 carbon.¹

17beta-esterification is the form of modification that accounts for most injected AAS, including the various testosterone esters: propionate, enanthate, cypionate and undecanoate. Suspended in an oil carrier, these 17beta-esters of testosterone are capable of providing a reasonably steady concentration of testosterone for periods dependent upon the length of the fatty acid ester, up to 12 weeks in the case of testosterone undecanoate. Testosterone esters are injected, typically into muscle (e.g., gluteus, deltoid, vastus lateralis) and are slowly released from the oil globule into the bloodstream. Once the testosterone ester is “floating” in the blood, it is attacked by esterase enzymes that cleave (cut) the ester bond—releasing the fatty acid from the testosterone portion of the molecule. The now-freed testosterone has a short time to

work, as it is metabolized just as quickly as if it had never been esterified. The benefit of esterified testosterone is that it continuously releases testosterone at a concentration that can be titrated by adjusting the dose and frequency of the injections.

SAFETY OF TESTOSTERONE ESTERS

Testosterone esters have a decades-long history of use with an admirable safety record when dispensed under the supervision of a qualified physician.^{2,3} Even when misused in supraphysiologic manner, testosterone esters are generally well tolerated, though there are clear health risks that escalate considerably with abusively dosed cycles. Further, certain individuals are predisposed to clotting, psychological distress, estrogen excess, liver damage and other side effects.^{4,5} This may result in significant harm, even death.

Cynics might believe that there was little clinical demand during the latter part of last century for testosterone replacement therapy (TRT) due to the campaigning of the anti-doping agencies, and absence of any financial incentive for pharmaceutical manufacturers, as patents for the esters were expired. An exception being the recently approved (after an inordinate delay) testosterone undecanoate Avedo, that has been marketed since 2003 in many other countries under the brand name Nebido.⁶ In their place, patentable topical testosterone formulations were formulated. The claimed benefits included a more physiologic release, convenience and safety compared to the injected esters.⁷ Though there was long a lack of awareness and acceptance of “testosterone deficiency” as a clinical condition, much of the demand for TRT is the result of direct-to-consumer marketing by pharmaceutical companies selling topically delivered testosterone. In fact, the Endocrine Society

openly discourages screening men for testosterone deficiency, impeding physician intervention and patient care.

Little real benefit has been noted in studies comparing injected testosterone esters to topical formulations.⁷ Further, the increase in certain adverse events (increased hematocrit, gynecomastia) associated with injected testosterone are offset by distinct adverse effects caused by topical testosterone (local site irritation, transference).^{8,9} Even the (highly disputed) recent studies that claim (after considerable statistical manipulation) that TRT is associated with an increase in cardiovascular risks found no increase based upon the delivery method used.^{10,11} In fact, the most damning study used topical testosterone to treat older men with limited mobility, not an injected ester.¹²

CARDIOVASCULAR RISK FACTORS

A study analyzing the results of 35 trials using testosterone sought to determine the effect on cardiovascular risk based on how the testosterone was given—oral, injected or topical.¹³ In fact, the authors discovered that oral testosterone therapy is particularly risky, with over twice the relative risk compared to the control groups. Injected and topical testosterone were not significantly associated with risk (due to a wide statistical variation), but the results support the suggestion that topical testosterone is less safe than injected esters, as the topical relative risk was 1.27 and the injected ester relative risk was 0.66. This means that if the data were tightly clustered (which is nearly impossible in meta-analysis), that topical use would have a 27 percent GREATER risk of a cardiovascular event (e.g., heart attack, stroke, death), whereas injected esters would have a 34 percent LESSER risk. This is most clearly reported in a study following over 6,000 patients treated

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with intramuscular (injected) testosterone ester therapy, which showed that intramuscular testosterone therapy did not affect cardiovascular risk EXCEPT for those most at risk.¹⁴ In the men most likely to suffer a cardiovascular event (e.g., heart attack, stroke, death), intramuscular testosterone was PROTECTIVE, with a 31 percent REDUCED likelihood of these events. The next group down (third quartile, or those in the upper half of risk, as opposed to upper quarter) just missed showing a significantly protective effect of the same magnitude.

A second arm of the 35-trial meta-analysis involved looking at how the body handles testosterone delivered topically versus injected.¹³ Testosterone is a prohormone in many tissues, as it can be converted into estradiol or dihydrotestosterone (DHT). Elevated DHT is thought to have an association with increased cardiovascular risk, and the skin is a site with significant 5 α -reductase activity—the enzyme that converts testosterone to DHT.^{15,16} Again, topical testosterone (you know, the supposedly newer, safer and industry-friendly testosterone) increased DHT considerably more than injected testosterone. The increase was over twice as great.

WHO SAID TOPICALS ARE SAFER?

Finally, a study accepted for publication in the *American Journal of Physiology - Endocrinology & Metabolism* reports on direct comparison of injected testosterone and topical, as it relates to three areas of extreme interest to all men—but more specifically, athletes.¹⁷ These areas are 1) increase in muscle mass and strength; 2) skeletal benefits (i.e., bone density and fracture risk); and 3) safety, with an emphasis on cardiovascular safety.

This meta-analysis deserves to be read by

all, but its length and relative complexity may be intimidating to most laymen. It is worthy to note its finding, though, in a thorough manner—as this directly contrasts two of the main arguments that have been directed against the use of testosterone esters: that topical formulations are equivalent therapies and carry less risk. FALSE! ... if the findings of this meta-analysis are confirmed in future studies.

It is important to acknowledge that these studies investigated the use of replacement doses, with rare exception. Yet, ask any athlete or bodybuilder who has misused/abused anabolic steroids for the purpose of gaining muscle size and/or strength if they have any affection for the topical agents. Men who have prior exposure to AAS are frequently dissatisfied with topical-based TRT, preferring injections, based upon conversations with several health care providers and patients on TRT. Certainly, many have tried AndroGel, Androderm or Testim, as these drugs are readily prescribed (either directly to the patient or to a third party who diverts the drug to the athlete/bodybuilder). Further, to facilitate access to the topical testosterone products, these specific drugs are commonly the approved product for hospital and insurance provider formularies. One such product, Testoderm, is even exempt from the controlled substance list.¹⁸ It would not be surprising to see others seek the same status.

Returning to the comparative study, the authors note that a loss of muscle mass is a component of aging, affecting primarily the type II (fast-twitch) muscles. This loss is also accompanied by a loss of motor neurons, the nerves that signal muscle action. Muscle mass is restored, even increased during TRT (or AAS misuse) in a dose-dependent manner, as has been noted in several studies and pretty much every gym except for Planet Fitness.^{3,19} Interestingly,

both type I and type II fibers respond positively to increasing testosterone concentration.

The increase in muscle is most disparate comparing low-dose TRT versus higher-dose protocols. In other words, low-dose TRT combats muscle loss by reducing protein degradation in the muscle; higher-dose TRT not only reduces protein degradation, but also increases muscle protein synthesis through mTOR activation, increasing intracellular IGF-1 and increasing satellite cell proliferation.^{20,21} The separate effects of higher-dose TRT not only increase muscle mass, but also raise the ceiling for continued growth.

MODEST VS. MODERATE STRENGTH GAINS

A criticism often voiced in clinical circles regarding injected TRT is that the pattern of release produces a short-lived period of supraphysiologic testosterone concentration in the blood, whereas for topical formulation, the peaks and valleys stay within the normal range. However, it may be that this period of elevated testosterone created by the pharmacokinetics of injected esters (i.e., how they are released into the bloodstream) is actually a benefit that is absent in transdermal (i.e., topical) formulations. Bodybuilders design their muscle-building cycles to avoid allowing the AAS concentration to remain in the supraphysiologic range, avoiding any drop into the normal range. In fact, this observation was made, that strength increases while on TRT were “modest” to insignificant with topical TRT, whereas injected TRT resulted in “moderate” strength gains.^{17,22}

Bone strength is nowhere near as “sexy” as muscle mass and strength. However, it is a legitimate target for TRT. Aging men suffer osteopenia, much like menopausal women, which can lead to an increased risk of fracture

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(broken bone). It is interesting again, that low-dose TRT requires testosterone to aromatize (convert into estradiol, the female sex steroid) in bone to provide full protection, whereas higher-dose TRT does not. Again, in comparing the results of numerous studies, injected TRT produced an increase in bone mineral density (a measure of bone strength) of upward to 10 percent, whereas topical TRT provided no benefit.²³

Lastly, the safety of a therapy is always of paramount importance. Testosterone replacement therapy, occurring primarily in late middle-aged and elderly men, carries three confirmed adverse events (i.e., side effects): increase in red blood cell concentration, or hematocrit; prostate events; and a small reduction in HDL, or good cholesterol. Briefly, TRT does not increase the risk of prostate cancer, despite the decades-long belief.²⁴ The relative effect between injected TRT and topical TRT on red blood cell production, prostate effects and natural testosterone production have not been studied.¹⁷

The advent of topically delivered TRT is a welcome option for most clinicians. However, the advantage lies primarily in convenience, and avoiding the discomfort of an intramuscular injection. Further, it appears that the advocates of topical TRT may have misspoken in regard to equivalent benefits, and greater safety based upon these reviews. There has been enough time for post-marketing surveillance to determine any advantages or safety risks associated with the various products on the market. At this time, there appears to be distinct advantages to the "tried-and-true" injectable esters. ■

Intramuscular testosterone therapy did not affect cardiovascular risk EXCEPT for those most at risk. In the men most likely to suffer a cardiovascular event (e.g., heart attack, stroke, death), intramuscular testosterone was PROTECTIVE, with a 31 percent REDUCED likelihood of these events.

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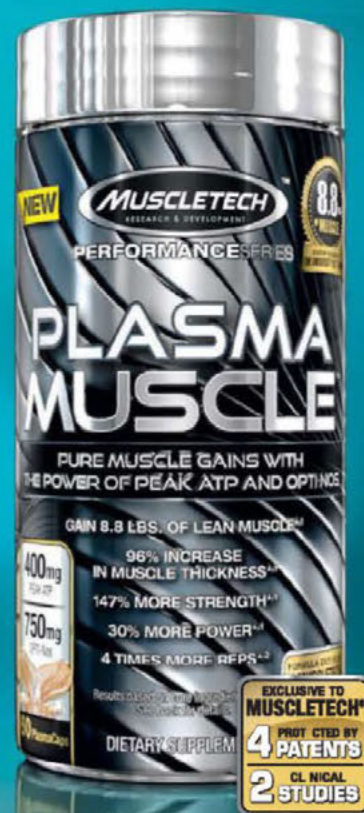
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BOOST STRENGTH WITH CLUSTER SETS

I've been lifting weights now for well over 25 years, and even though I can't bench press over 400 pounds anymore, I still remember what it took to get to that level of strength. One of the techniques that helped me gain strength the most throughout the years was cluster set training.

Cluster set training involves the use of a weight that you can lift for a specific amount of repetitions, and instead of lifting the weight without interruption for a complete set, you break the set up into mini-sets where you only lift the weight for roughly one-third of the total repetitions that you normally perform successively. After the first mini-set, you rack the weight and wait 10 to 30 seconds, and then repeat the process until you surpass the total number of repetitions that you normally perform without interruption by at least one repetition.

Let me give you a good example of cluster set training. Let's say you can bench press 275 pounds for five successive repetitions. Well, during a cluster set you would lift the 275 for the first mini-set within the cluster for two repetitions, rack the weight, wait 10 to 30 seconds and repeat two more times, or for

two more mini-sets, within the first cluster. This would give a total of six repetitions with 275 pounds, meaning you performed one more repetition within the cluster set than you normally perform during a regular set with no rest between repetitions.

The improved power production brought on by cluster set training should provide quite a training effect that fosters considerable gains in strength.

CLUSTER SETS INCREASE TRAINING VOLUME

The ability of cluster sets to increase training volume has clearly been demonstrated in many studies. One of these studies by Iglesias-Soler et al.⁴ had subjects perform two sessions of squats with a weight they could do for four successive repetitions. In the first session, the subjects performed a traditional set with three total sets and three minutes of rest between sets. In the second session, they performed a

cluster set with same weight, but rested 45 seconds between each mini-set. The results showed that the cluster set training increased the total number of repetitions considerably, relative to traditional training. In addition, cluster set training also resulted in the weights being lifted with much more velocity, indicating much better mechanical performance, or power output, during the lift.

REST PERIODS RESTORE THE PHOSPHAGEN SYSTEM, INCREASING WORK CAPACITY

The key muscle-enhancing stimulus from cluster set training centers on the increase in repetitions performed during a cluster set relative to a standard set. This effect potentially triggers considerable gains in muscle growth and strength.

So, what is it about cluster set training that allows the performance of additional repetitions? It has to do specifically with the rest periods between mini-sets that, as I mentioned before, must be as long as 10 to 30 seconds to sufficiently restore energy levels within the muscle cell, to fuel the additional muscular contraction required for the extra repetitions.

The precise reason for the 10- to 30-second rest period has to do with the fact that intense weight training primarily burns ATP and phosphocreatine (PC) to provide the energy required for muscular contraction, and 10 to 30 seconds is the amount of time required to sufficiently replenish the ATP and PC stores within the muscle cell.⁵ So, these relatively short rest periods are just right for resupplying the ATP/PC energy system mainly used during hardcore weight training.

CLUSTER SETS INDUCE PAP FOR GREATER PERFORMANCE

In addition to cluster set training enhancing muscular performance by specifically replenishing the ATP/PC energy system, cluster sets also induce post-activation potentiation (PAP). Post-activation potentiation is a well-known phenomenon that increases muscular contraction force by increasing the number of interactions between the two force-producing proteins actin and myosin within the muscle cell, ultimately improving contraction force and strength. What's more, PAP is even more strongly induced when resting for short periods of time between sets^{2,3}, which cluster sets provide during the brief rest period between mini-sets within the cluster. Altogether, the ability of cluster set training to stimulate PAP represents another mechanism by which cluster set training improves strength.

BOOST STRENGTH WITH CLUSTER SETS

The improved power production brought on by cluster set training demonstrated in the previously mentioned study by Iglesias-Soler et al.⁴, in combination with the greater amount of repetitions performed, should provide quite a training effect that fosters considerable gains in strength. Indeed, this influence was shown in a study where 18 highly trained athletes were divided into two training groups— with one group performing a traditional training, squat workout and the other performing a cluster set training squat workout.⁵ The results showed that while both groups increased strength considerably, the cluster set-trained group increased muscle power much more than the traditionally trained group, supporting the benefit of cluster set training for strength development.

MUSCLE HYPERTROPHY, TOO!

In addition to cluster sets driving considerable strength gains, this mode of training can also be performed with a higher repetition range, focusing more on muscle hypertrophy. For instance, performing cluster set training with relatively lighter weight will permit a repetition range of eight to 12 within one cluster set, while using heavier weights promoting greater muscular activity that will induce considerable hypertrophy.

In fact, one investigation by Girman et al.

showed that cluster set training generated a lower amount of lactate while performing a similar workload relative to traditional training. Since lactate production is related to metabolic stress, the lower amount of lactate produced from cluster set training indicates a lower amount of metabolic stress in the cluster set-trained group. Furthermore, because lactate, or lactic acid, accumulation tends to inhibit muscular contraction, the lower amount of lactate produced while cluster set training indicates that cluster set training will permit the completion of more repetitions, stimulating more muscle growth.

In addition, because cluster set training allows the use of more repetitions at a higher intensity level, cluster set training within a higher repetition range will still recruit many fast-twitch motor units for considerable strength gains too. ■

For most of Michael Rudolph's career he has been engrossed in the exercise world as either an athlete (he played college football at Hofstra University), personal trainer or as a research scientist (he earned a B.Sc. in Exercise Science at Hofstra University and a Ph.D. in Biochemistry and Molecular Biology from Stony Brook University). After earning his Ph.D., Michael investigated the molecular biology of exercise as a fellow at Harvard Medical School and Columbia University for over eight years. That research contributed seminally to understanding the

function of the incredibly important cellular energy sensor AMPK— leading to numerous publications in peer-reviewed journals including the journal *Nature*. Michael is currently a scientist working at the New York Structural Biology Center doing contract work for the Department of Defense on a project involving national security.

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TRESTOLONE (7-Methyl-Nandrolone) *The 'New' Anabolic Steroid*

This month, I want to review an anabolic steroid that is becoming somewhat popular, at least among those regularly on the Internet. It is a drug you might not even have heard of, as it isn't a traditional pharmaceutical anabolic steroid like Winstrol, Dianabol or Deca-Durabolin. Its appearance is fairly recent, and usage not nearly as widespread. I'm talking about trestolone acetate, also known as MENT. The popularity of this anabolic steroid stems from a few things. One is the simple nature of the compound itself. This nandrolone-derivative is an effective anabolic steroid for building muscle and strength. Another is its history.

There is a very interesting story behind it, which we'll get into in a minute. Lastly, trestolone exists in a legal gray area in the United States and many other countries, making it readily available from online sellers. How can that be? We'll take a look.

This month is all about trestolone, and what we actually know about this "new" anabolic steroid.

WHAT IS TRESTOLONE (7-METHYL-NANDROLONE)?

As the chemical name suggests, the steroid we're discussing here is simple derivative of nandrolone. Nandrolone is, of course, the base steroid made famous by Deca-Durabolin (nandrolone decanoate), one of the most widely used drugs of the anabolic-androgenic steroid (AAS) class. In this case, the base steroid nandrolone has been modified with the addition on a methyl group at carbon 7. The name MENT is actually an acronym for this molecular structure. The letters ME come from the additional METHyl group, and NT the starting structure of NorTestosterone, which is another way of describing nandrolone. The more common word nandrolone is associated with this drug quite a bit. It is important to remember, however, that modifying a steroid in seemingly minor ways can change its characteristics considerably. In this case, methylation at C-7 results in significant alterations to steroid metabolism

and activity. Trestolone is unique, and thus it is really not fair to associate it with nandrolone unless we are discussing it on a molecular level.

What is so unique about this drug? One thing that 7-methylation does is inhibit enzymatic 5-alpha reduction. This is the process in which nandrolone normally converts to the weaker steroid DHN (dihydronandrolone) in certain androgen-responsive tissues such as the skin, scalp and prostate. 5-alpha reduction of nandrolone is one of the primary reasons this steroid is less androgenic than testosterone and many other AAS. Since this pathway is inhibited with trestolone, however, we find a drug with slightly more distinct androgenic activity. Trestolone does also appear to be far more anabolic in nature, though, as this side of its character is very strong. And at least according to lab assays, it is somewhere between 3.5 and 23 times more anabolic than testosterone, on a milligram-for-milligram basis. This potency may have something to do with resistance to serum-binding proteins. Trestolone exists in a much more "free" state than nandrolone or testosterone, where receptor binding is possible. Lastly, whereas nandrolone is only mildly estrogenic, trestolone can be more pronounced for related side effects such as water retention and gynecomastia. Its conversion to 7-methylestradiol, a more potent estrogen than regular estradiol, is likely a major reason.

HISTORY OF TRESTOLONE

Although many regard this as a "new" anabolic steroid, 7-methyl-nandrolone is actually quite an old drug. This agent was first synthesized in back in 1963, alongside several other 7-methylated AAS. So it goes back quite a long ways. It was assayed at the time, and shown to have significant anabolic and moderately androgenic activity, as discussed. It seemed to have clear potential as an anabolic agent. However, there were a great many steroids being synthesized in the lab during the 1960s. There was little commercial need for so many, and the development process was exceedingly expensive, even back then. Thus, only a select few agents went on to be developed as actual commercial pharmaceutical steroid products. MENT would sit "undiscovered" in the books for several more decades.

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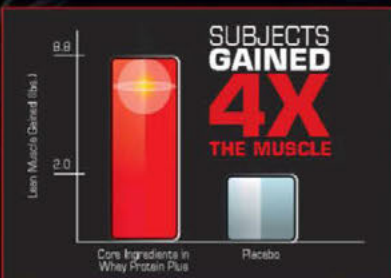
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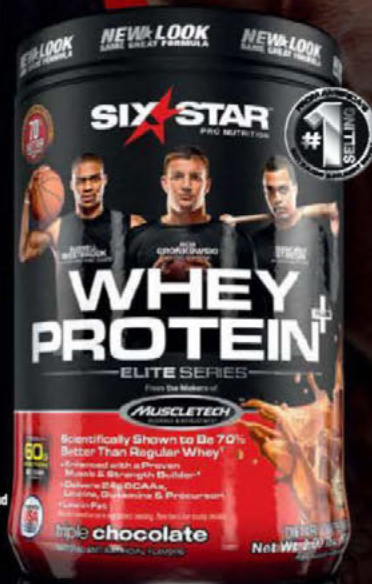
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Schering AG (now Bayer) announced that it was developing MENT® (trestolone acetate) as a United States drug product. This was remarkable for many reasons—and that it would be the first true new anabolic steroid on the market in decades was not even the most noteworthy issue. It was also being targeted for some interesting uses. One was that of a male contraceptive, possibly an implant strip that could prevent conception for months. It was also being investigated as a male HRT (hormone replacement therapy) drug. Some were heralding it as the future of male birth control, and the next big thing in HRT, namely a prostate-sparing alternative to testosterone. This put a huge spotlight on the drug. MENT has since been the subject of a few successful clinical studies. We haven't heard much from it in the last couple of years, however. Reportedly it is somewhere in "pipeline," though I've been unable to confirm its exact status.

SALES AND LEGAL STATUS

Several years ago, trestolone acetate began appearing in injectable products made by underground steroid manufacturers. They likely were taking an interest in the MENT clinical trials, and attention given to Bayer about the drug. This was perhaps also an effective way for some to stand out among the growing number of underground labs. The acetate ester isn't quite ideal as an injectable, though. It is fast acting, and must be injected every two to three days. Eventually, long-acting injectable esters appeared, such as trestolone decanoate. Trestolone products also began appearing in United States online stores that sell various anabolic and ancillary products (such as anti-estrogens and GH-stimulating peptides) for "research purposes." It is typically sold here in sterile "not for human use" injectable solutions, powders and transdermal gels. Many consumers in the United States are specifically buying them because they believe these products are legal ... something they can't get in trouble for. Is this actually true? It may be. Let me explain what I know.

First, I'm not an attorney and don't pretend to know everything about AAS laws in the United States. A real attorney such as Rick Collins (MD's resident legal expert) could address this with much greater authority. However, I do believe that trestolone remains in a gray area because it was never explicitly named in any anabolic steroid controlled substance law. Drugs that have been "listed" are considered federally controlled substances. The illegal trading in these drugs carries very hefty criminal and civil penalties. These crimes are policed by the U.S. Drug Enforcement Administration (DEA). Trestolone isn't recognized by the DEA as a controlled substance, though. Barring that, there are FDA-related laws that make it illegal to sell an unapproved drug such as this for human consumption. These aren't enforced

with quite the same legal weight and vigor, however. Some people slip through the cracks. If the compound is truly sold and used for non-human research purposes, it might be fine. If the unwritten but clear intent is selling for human consumption (bodybuilding use, for example), a crime is likely taking place. The simple personal-use possession of trestolone should not be illegal in the United States until such time as it is named as a controlled substance. Again, I'm not a legal expert.

DOSAGE AND TOXICITY

There have been several human studies on trestolone to date.¹ Thus far, the drug seems to be well tolerated when used under controlled medical conditions. This steroid does not carry 17-methylation (an alteration common to most "designer steroids"), and as such does not present appreciable liver toxicity. It also appears to have a lower level of relative prostate stimulation compared to testosterone. Thus, it may indeed turn out to be a safe and viable option for male HRT. With that said, the number of studies on this drug is still small, and dosage protocols have not yet been fully established. Furthermore, optimal methods of using trestolone via intramuscular injections and transdermal gels for muscle- and strength-building purposes are lacking, as well as a full understanding of its risks in this regard. It is still largely uncharted territory, clinically speaking. Of course, this is an anabolic steroid. All drugs of this class share many risks, including an increased possibility of cardiovascular disease when misused/abused.

Common anecdotally established protocols for using this drug are widely shared among the bodybuilding community. With the injectable form of this drug (trestolone acetate), these usually call for somewhere between 25 milligrams and 50 milligrams to be injected every second or third day. This type of schedule would likely be necessary for consistent drug delivery, given the short-acting nature of the acetate ester. With a longer acting ester, similar cumulative dosages could be spread out over fewer, less frequent injections. For transdermal products, which usually also contain trestolone acetate, bodybuilders are commonly recommending a dose of 25-50 milligrams per day. Transdermal delivery is much less efficient than injection, of course. As such, we would expect a high portion of waste, and a much lower overall delivered dose than with the common injection recommendations. Still, trestolone is widely reported as being efficacious via both routes of administration, and both types of products remain fairly popular at this time.

SUMMARY

Trestolone has been around, at least somewhat quietly, for years now. We've had enough time for the feedback to accumulate. So far, what

we've been seeing is generally positive. For one, the drug is a formidable muscle builder. It works well. Many users have taken to describing it as a milder form of trenbolone, in fact, instead of a stronger form of nandrolone, which would be more structurally appropriate. This is, of course, just a matter of perspective. These are subjective evaluations anyway. However you describe it, trestolone is significantly anabolic. It is also moderately androgenic, and thus less likely to be associated with libido loss than nandrolone. On the other hand, the more estrogenic side of this steroid can be problematic for some users. Reports of bloating and gynecomastia are not uncommon. This is typically addressed with anti-estrogenic drugs, often sold on the same websites that market trestolone for "research" applications.

This anabolic steroid is quite unlike most of the unknown "designer" steroids we've seen floating around the Internet and "supplement" market in recent years. There actually is some real history here. Trestolone was (perhaps is) much closer to being an approved drug. We have actual human studies on it, with favorable toxicity data to review. While its safety and efficacy have been investigated in far less detail than we expect of an approved pharmaceutical, it remains significantly ahead of most designer steroids in this regard. These gray-market products usually do not have any human data at all to reference. Still, it is important to emphasize that until such time as the FDA or some other authoritative government body approves trestolone as a prescription drug, it remains a research agent. There are inherent risks with using such drugs, as well as drugs manufactured on the gray or black market, in general. These include the possibility of unknown side effects, improper dosing and contamination. For these reasons, such products can never be recommended for use. As always, the intent here at MD is to keep you informed, not minimize the actual risks. Be safe. ■

Reference:

7-alpha-methyl-19-nortestosterone (MENTR): the population council's contribution to research on male contraception and treatment of hypogonadism. Nieschlag EI, Kumar N and Sitruk-Ware R. Contraception 2013 Mar;87(3):288-95. doi: 10.1016/j.contraception.2012.08.036. Epub, 2012 Oct 10.

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Since its launch, Clear Muscle™ has taken the musclebuilding category by storm, delivering unprecedented musclebuilding results that are more impressive than any other studied performance-enhancing supplement in sports nutrition history, including protein, creatine and BCAAs. In breakthrough, gold-standard research out of The University of Tampa, hard-training subjects who supplemented with the revolutionary BetaTOR® compound in Clear Muscle™ packed on 16.3 pounds of lean muscle in 12 weeks, while the placebo group only gained 4.6 pounds. They even added 170 pounds to their one-rep max on the bench press, squat and deadlift, compared to members of the placebo group, who only added 55.8 pounds.

BetaTOR® is a unique, cutting-edge metabolite and free acid derivative of leucine and HMB, which puts the body in a perfect state to build muscle. Clear Muscle™ works on two separate pathways in the body. It activates mTOR— your body's primary regulator of muscle growth—to dramatically amplify protein synthesis. It also works to inhibit the ubiquitin proteasome proteolytic pathway (UPPP), which is the principal mechanism responsible for protein catabolism, or the breakdown of muscle tissue. This makes it one of the most powerful musclebuilders available today, and you can only get it exclusively

from MuscleTech® in a clear, liquid pill.

Phospha Muscle™ is another groundbreaking innovation that delivers the novel compound Mediator® PA, supplying a clinical dose of the world's purest phosphatidic acid. According to research published in *Nutrition & Metabolism*, activation of anabolism in response to exercise occurs through a mechanism that involves phosphatidic acid. While phosphatidic acid is found naturally in your body, new clinical research from The University of Tampa is showing that there is an added musclebuilding benefit to oral supplementation of phosphatidic acid. In fact, subjects supplementing with a

750-milligram clinical dose of phosphatidic acid daily and performing a weight-training protocol three days per week put on 5.3 pounds of solid, lean muscle in just eight weeks— double that of the placebo group. They even increased their strength on the leg press by 60 percent. Phosphatidic acid works on the mTOR pathway to stimulate protein synthesis. In fact, in a separate phase of the study, pre-clinical research showed that phosphatidic acid increased mTOR signaling by over six times, compared to baseline.

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MUSCLE TECH research report

(NMR) spectroscopy— a highly advanced analytical chemistry technique that guarantees the content and purity of a sample, as well as its molecular structure. This revolutionary compound is the purest of its kind.

Plasma Muscle is the final addition to the Musclebuilding Trilogy. This breakthrough formula was engineered based on research from The University of Tampa, which demonstrated that oral supplementation with adenosine 5'-triphosphate (ATP)— the body's primary source of energy— can actually stimulate the anabolic response and even improve exercise performance. Study subjects who supplemented with Peak ATP® put on 8.8 pounds of lean muscle in 12 weeks, while the placebo group only gained 4.6 pounds. They also increased their muscle thickness by 96 percent, compared to the placebo group. That's because Peak ATP® works by driving blood flow into the muscles and increasing anabolic signaling to trigger muscle growth and repair. It also enhances nitric oxide production to induce vasodilation, resulting in improved oxygen delivery to the muscles and a powerful pump for better workouts. In fact, in a separate phase of the same study, subjects even increased their combined one-rep max on the bench press, squat and deadlift by 147 percent and boosted their peak power output

by over 30 percent, compared to the placebo group. Plasma Muscle delivers a full 400-miligram clinical dose of a patented Peak ATP® to stimulate unprecedented growth.

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ajowan extracts. MuscleTech® researchers worked with researchers at a leading human performance lab overseas to discover and test this first-of-its-kind ingredient matrix. This unique combination of ingredients was shown to help weight-training men increase muscle strength and endurance to pump out four times more reps on leg extensions than the placebo group.

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SHOULD **NATURAL** BODYBUILDERS TRAIN THE SAME AS **ENHANCED** ATHLETES?

THIS IS A QUESTION OTHER MAGAZINES WOULDN'T PRINT, BUT I KNOW MD WON'T AVOID IT. SHOULD BODYBUILDERS WHO TRAIN NATURALLY SET UP THEIR WORKOUTS DIFFERENTLY FROM THOSE WHO CHOOSE TO BE ENHANCED? IN TERMS OF HOW MANY DAYS A WEEK TO TRAIN, HOW MUCH TO DO IN TERMS OF VOLUME FOR BODY PARTS, AND EVEN WHETHER OR NOT TO USE MOSTLY STRAIGHT SETS OR TO ALSO INCORPORATE THINGS LIKE SUPERSETS AND DROP SETS, WHAT WOULD THE DIFFERENCES BE? IMAGINE YOU HAVE TWO CLIENTS YOU ARE WRITING UP TRAINING PROGRAMS FOR. ONE IS NATURAL AND ONE IS ENHANCED. HOW WOULD THOSE ROUTINES BE DIFFERENT?

BRANCH WARREN

Yeah, I do think it should be a little different to address the recovery issues. One thing PEDs [performance-enhancing drugs] do is to speed up recovery from training, so they allow for a person to train longer and more often. So I would scale down the volume and the frequency for the natural trainer to allow for more rest. As far as supersets, drop sets and so on, I would still keep those in. Just keep the workouts to an hour, and have two or even three full rest days a week.



DENNIS WOLF

Yes, I would have the two men train differently. The thing about drugs is that they protect the muscles from going into a catabolic condition where they start to shrink. The drugs keep them in an anabolic state, where they are able to recover and grow. So if someone doesn't have that protection, they need to be more careful. Natural guys have to be very careful not to overtrain. They shouldn't do too much in any one workout, though this will be different for different natural bodybuilders— and they can't train for more than a few days without taking a day or two off, so their bodies can fully recover before training again.

As far as scheduling workouts, I'm not giving exact numbers because that's impossible to say. Maybe some natural guys can train for two hours at a time for four to five days in a row before a day off and still recover, while others might need to make sure they get their workouts done in an hour, and find they can't recover if they train more than two days in a row with weights. I don't think it's really so important that a natural guy avoids drop sets and supersets. Those can be good for anyone. It's more the overall time in the gym and how often you train that they should be paying attention to.

I also feel supplementation is a little more important for natural bodybuilders. Drugs increase the red blood cell count, so an enhanced bodybuilder gets a pump pretty easily. Natural guys would want to make sure they use a nitric oxide booster product with arginine in it before their workouts, so they can get that same type of pump.

Finally, getting back to that protection idea I talked about, natural bodybuilders should always be sure to have a post-workout shake as soon as they are done training, containing BCAAs [branched-chain amino acids] and fast-digesting carbs. They need to put the aminos and glycogen back into the muscles as soon as possible to avoid that catabolic state.

GUY CISTERNINO

I think this is a great question. My honest answer, although many might disagree with me, is that I believe we all should train the same. PEDs do not make us who we are in the gym. Do they enhance and help? Absolutely. We ALL have the tools we need to build the best physique possible. That is heart, dedication and desire. One thing I remember my high school football coach Poppe saying was, "We all put our pants on the same way." By that, he meant that we are all human and we all can achieve greatness, but it is the effort one puts into what they desire that determines how good we become at our craft. If anyone goes back and asks any of my coaches that coached me in any sport, especially football, one thing they would all say is I had the biggest heart on the team. That was something my father instilled in me when he coached me in Pop Warner football. He always told me as long as you have heart, anything is possible.

Throughout my life, I was told I couldn't and wouldn't do many things, and I did them all. Training in the gym is no different. There are many over-the-counter supplements that

can help with strength, recovery and either mass gains or fat loss. Sure, PEDs are much stronger in every aspect, but that shouldn't change how we train in the gym. I incorporate all different methods in the gym: high volume, drop sets, supersets and straight sets. I never do the same thing. I learned a ton in the past few years, and that's in large part thanks to Charles Glass. He opened my eyes to so many different workouts and exercises in the gym. Most of what I do in the gym is similar to what I have always done. I train as heavy as I can, but I focus more on TUT (time under tension) to really give ALL the fibers in the body the focus they need to grow. My workout breakdown is the same now as it has been since high school:

Monday:	Legs
Tuesday:	OFF
Wednesday:	Chest
Thursday:	Back
Friday	Arms
Saturday:	Shoulders or OFF
Sunday:	Shoulder or OFF

Depending on how I feel on Saturday or Sunday is how I decide when I train shoulders.

"We ALL have the tools we need to build the best physique possible. That is heart, dedication and desire."

—Guy Cisternino



JUAN MOREL

I don't think it should be any different. It's a state of mind, nothing more. People think you should always train differently, like natural guys should train less or not as hard, but I disagree. Look at guys who are incarcerated. Ask anyone who has been in there as an inmate or an officer, and they will tell you there are some guys who are 260 pounds at five percent body fat or less. These guys are not using any chemical enhancements, yet they train high volume and often even do the same body parts every day! Why? Obviously, some of them have good genetics, but it's also about recovery. They get plenty of rest, and they eat as much as they can. The food in there isn't great, but they can use their commissary money to get extra protein in the form of canned tuna, chicken and mackerel. That can put them at 35-400 grams a day. So they train like beasts, eat plenty of food and get tons of rest—and they get huge. Now if you aren't eating enough or resting enough, you shouldn't be training with high volume and going for many days in a row without a break, regardless. But I do feel how much training you can do and gain from is based more on your attitude and especially your recovery.



DEXTER JACKSON

This is a question that also comes up with enhanced athletes, because even they aren't on "supplements" all the time—at least they shouldn't be! Whether you're on or off, the principles of training remain the same. A rep range of eight to 10 reps to failure builds muscle. As far as how much training to do, here's the thing. I think a lot of enhanced guys do way more than they need to. They might be able to get away with it because PEDs do enhance recovery, but that doesn't mean there is any real added benefit to very high volume or hitting body parts more often. Train a body part hard once a week, and then let it rest and rebuild. I trained four days a week for most of my career and made excellent progress. I never personally believed in doing all that 20-30 sets per body part, either. The most I will do for any body part is back, and that only gets 15 work sets. So no, training shouldn't be very different at all for those two bodybuilders.



WHEN DID YOU REALIZE YOU HAD A GIFT FOR BODYBUILDING?

AT WHAT POINT EARLY ON DID YOU REALIZE YOU HAD A CERTAIN GIFT FOR BODYBUILDING, THAT YOU WERE DIFFERENT FROM EVERYBODY ELSE? WERE YOU THE ONE WHO FIGURED IT OUT, OR DID OTHERS POINT IT OUT TO YOU?



DENNIS WOLF

It was not me who noticed I was anything special. I had been training at a gym for a year, and my goal was just to build some muscles and look like a bodybuilder. I really didn't even know there were amateur contests. All I saw were some magazines with the top IFBB pros in them. A guy at my gym named Mike Schulz came up to me and asked me if I wanted to compete in a local contest that was coming up in eight weeks. I told him I didn't think I was good enough for that, to get up onstage. He knew a man who helped bodybuilders in that region of Germany prepare for contests, gave them diets and showed them how to pose and so on. It was a 30-minute drive, and then we waited an hour for the man to show up. Once he got there, he took a look at me and showed me a few poses, and then said I did have good potential and should get ready for that show. I knew that this man had worked with many other bodybuilders, so if he said I could be good, it had to be true. It was exciting, because I didn't quite see it myself yet. Eight weeks later, I was onstage for the first time at age 21. I didn't win, but it motivated me a lot. I came back the next year and won the whole show, and then started winning bigger shows from there on.

JUSTIN COMPTON

I think that I realized I had a gift for this sport in 2010, when I won my first novice and open overall. I was told I had the genetics to be a pro when I did my first contest at 18, winning my first time ever onstage. Everyone who told me that was very close to me, so I knew I did something right but wasn't sure I was pro material at that point. When I won my first show, I hadn't really taken training quite as seriously up until 16 weeks out, and I was able to come in and take the whole show. I felt like at that point if I really dedicate myself to this, that I might someday make it. I was able to finish second in my first national show eight months later after jumping from light heavyweight to heavy, then earning my pro card 14 months after this at the 2012 Nationals. I have always had a good support team around me that believes and supports me, so I would say that without their encouragement, I probably wouldn't have discovered my true ability in this sport.



JUAN MOREL

I would say it was back at my very first show, the NPC East Coast in New Jersey. I didn't know a whole lot about bodybuilding yet. I had been a thin, athletic guy and my main sport up until then had been handball. I started looking at the magazines and thought, man ... I would love to look like those guys. So I started training and put some size on, then decided to test the waters and do a show. I was 5'11" and 192 pounds, and was training naturally. Backstage, all the guys looked so huge to me. Freaking Jeff Long was in that show! They were telling me I looked really good, but I was like, nah, not like you guys! It was probably more so my structure and shape that they were talking about. I had some size, but needed a lot more. Long story short, there were 30 guys in my class, and I took second. So I thought, maybe I can be pretty good at this if I keep going and improving. So I did, and here I am!

GUY CISTERNINO

I always read MD growing up, and I have a ton of them from years ago with many of the greats on the cover. My father was always in shape and always into working out. It wasn't until I was in college and working at GNC, that another manager from GNC came into the store where I was working and asked me, "What do you do?" I said, "I go to college and play football." He asked, "Why the hell are you playing football? You should be competing in bodybuilding!" I told him I always wanted to, but never knew how to get into it and get started. So he gave me my first diet. I did my research and found a show I wanted to do, which was in West Virginia, and went there and won the novice class, novice overall and my open class, but lost the overall to current IFBB pro Fred Smalls. Since that day, I was hooked. I was always addicted to training, and I always wanted to compete. I remember after football practice, I would go into my locker room, eat a protein bar and go up to the weight room and train like a maniac. Yup, even after two hours of brutal practice on the field, I still killed it in the weight room because I knew one day I wanted to compete. It just took a piece of paper with a diet on it to get my ass in gear to get onstage. And the rest is history!



DEXTER JACKSON

For me, it had to be the 1995 NPC USA. I entered the light heavyweight class, which was loaded with more than 30 guys. I weighed in at 187, the lightest one! All the other guys were right at the class limit of 198%. I saw them all weighing in and I got so bummed. They all looked huge to me and I thought, "These dudes are gonna kill me!" But lo and behold, I won the class. That's when I realized it wasn't all about size. I had things the other guys didn't, like my shape and condition. So I said, "I just need to get bigger and I can be really good." It took me another three years to turn pro and those were tough years, but I knew all along I just had to put the work in because I did have the ability to go far in the sport.



BRANCH WARREN

When I won the Teenage Nationals at age 18, I knew I could do well in the sport if I kept going, and I actually decided after that show to become a pro bodybuilder. I also won the NPC Texas show that year, the open overall. I didn't try the national level until 1999 when I did the Junior Nationals in San Antonio. Texas was a powerhouse back then for bodybuilding. I got fourth in the heavyweights. Robert Washington, the super heavyweight and overall winner, was from Texas, and runner-up to him was the late Mark Hanlon, my old training partner from Metroflex. Johnnie Jackson won the light heavies, also from Metroflex. Runner-up to him was Franklin Roberson, and the middle-weight winner was Prince Fontenot, all from Texas.

A CUT ABOVE

WITH 4-TIME MR. OLYMPIA JAY CUTLER



"I am comfortable with the idea of fans training like me, as long as they understand that they should definitely tailor my workouts to their own needs and lifestyle."

CARDIO TWICE A DAY?

A few years back in MD, you recommended 30 minutes of cardio first thing in the morning and 30 minutes after weight training, for getting ripped. I am 12 weeks out from a contest. I weigh 230 now, and I can see my top abs when flexing. Do I need two sessions of cardio per day if my calories are low? My fat loss seems to have stopped.

When to start doing cardio twice a day is an individual thing, and really should be based on how lean you are and how fast or slow the fat is coming off. I didn't need more than one cardio session a day at 12 weeks out, but by six weeks out it was essential. Most people, unless you are gifted with an extremely fast metabolism, will find that twice-daily cardio is a must to hit peak contest condition. It's not tough to get lean enough to see a six-pack, but modern bodybuilding standards call for striated glutes and clear detail in all the major muscle groups.

One thing I want to clear up is that cardio has to be intense to be effective, or that

you absolutely have to work within some specific heart rate to burn fat. Those rules really are more applicable to regular people. Bodybuilders carry a whole lot more muscle mass, so we burn fat more easily than the average guy or girl would.

For me, cardio is about cruising at a pace that isn't exactly comfortable, but I'm never out of breath, either. If you're doing 30 minutes of cardio, you don't want to be fatigued at 15 minutes in. I prefer the StepMill because it's challenging and I can do other things on it, like crunch down on my abs or serratus, or squeeze my glutes and hams to help bring out more separation. You can always watch

TRAINING LIKE MR. OLYMPIA: EASY DOES IT

As a four-time Mr. Olympia, a lot of aspiring future champions out there will often copy your workouts in hopes of looking like you. Do you feel that's a good idea, and is there anything you would like to say about beginners, intermediates or even advanced bodybuilders who are thinking about doing your exact workouts?

I think using my workouts for ideas and inspiration can be useful. Otherwise, I wouldn't put out training DVDs, explain my workouts in magazine articles or post clips of them on YouTube. The fact that I get so many emails and comments thanking me, tells me that people are definitely getting useful information that they can apply. After over 20 years, my workouts are actually still pretty basic. I have adapted and refined some of the basic movements to suit my own needs, but it's still nothing crazy.

One thing I try to make a point of emphasizing is that many others out there probably shouldn't do quite as much volume as I did in the workouts of mine you see and still read about. I was at 300 pounds in the off-season during my Mr. Olympia years, and I did this for a living, so I could eat and rest as much as I wanted to. I know the average guy out there who works and maybe has a family doesn't have that kind of time on his hands to make sure he never misses a scheduled meal, and couldn't take naps or sleep in if he felt the need to. I don't happen to require a lot of sleep, but most people would, on my training schedule. So instead of doing 20-30 sets per body part like I often did, I advise others to trim that down to 12-15. I still believe that blood volume training with moderate to heavy weights for sets of eight to 12 reps is effective for the majority of bodybuilders.

As far as copying my exact routines, I suggest picking and choosing the exercises that work best for your own body and structure. Sometimes, they might happen to be the same ones that I do— and other times, they won't be. Many people have told me that they like to try exercises and routines that I've used to improve specific areas on my physique, if they happen to need work on that same muscle group. And often it does work for them, too.

So overall, I am comfortable with the idea of fans training like me, as long as they understand that they should definitely tailor my workouts to their own needs and lifestyle.



TV, read or listen to music too.

From the sound of things, you still have a substantial amount of fat to lose if you can't see all your abs yet. Go ahead and do cardio twice a day, but keep an eye on what's going on. If you find yourself "ahead of schedule" a few weeks out and close to contest condition, you can always cut back to one session a day. ■

The Animal Kingdom

WITH 8-TIME MR. OLYMPIA LEE HANEY



PRE-EXHAUST

A PERFECT METHOD TO STIMULATE, NOT ANNIHILATE!

TOO MANY INJURIES TODAY!

Why did I feel the need to talk about the pre-exhaust method this month? Over recent years, I could not help but notice how common it is for high-level bodybuilders to suffer very serious injuries such as tears of the quadriceps, pectorals, biceps and more, as well as ongoing problems with their lower backs, knees, shoulders, hips and elbows. Training injuries were practically unheard of in the days of men like Arnold, Franco, Frank Zane, Robby and all the way through the 1980s. I had to ask myself, why are so many of the athletes today getting hurt? It has to do with the way bodybuilders are training today, which is often more like powerlifters. They're using the wrong training methods, and I don't blame them. A lot of the misinformation comes from what they read online, which should never be taken as authoritative. For instance, many bodybuilders have been led to believe that "there is no such thing as overtraining." Excuse me? That's so ridiculous, that I find it hard to believe anyone would believe it. If it were true, even 12 hours a day of lifting weights would be productive. Today's bodybuilders need to be educated with solid principles so their training can be both safe and productive.

STIMULATE, DON'T ANNIHILATE!

It doesn't take much in the way of hard, intelligent training to stimulate muscle growth. But if you aren't careful, it's easy to "annihilate" and tear your body apart. That might not be on your mind as a young man. But one day you will be 40, 50 or even 60 years old, and you don't want to be riddled with pain and injuries because of what you are doing in the gym right now. Any professional athlete who pushes his body to the limits will have some type of discomfort later on in life, but it's up to you whether they are minimal or crippling, and limit what you are able to do in everyday life.

PRE-EXHAUST: MAKE MODERATE WEIGHTS FEEL 'HEAVY'

We need to do two types of exercises to build the best physique possible—one that not only has mass but also shape, proportion and symmetry. First are the primary, foundational movements. These are heavy compound lifts such as the bench press, squat, deadlift, barbell row and military press. You also need to incorporate secondary shaping movements. These tend to be isolation exercises like leg extensions, dumbbell flies and lateral raises.

One thing many bodybuilders never consider is that the sequence of exercises can be manipulated. The standard order is to do your primary movements first. Over time, however, going as heavy as possible on those can lead to serious issues with your joints and connective tissues, even muscle tears. So instead of bench-pressing first and using 300 pounds, the pre-exhaust method would have you doing flies first. That fatigues the pectoral muscles while leaving your triceps and front delts, so that you only need to bench-press about 200 pounds to feel like 300. The pecs don't know how much weight is actually on the bar—they only know what feels heavy. I did that about every third or fourth chest workout myself, and it gave my shoulder and elbow joints a nice break.

By age 21, I was squatting 500 pounds for 15-20 reps, but I was already experiencing lower back pain. A chiropractor explained it would only get worse over time, and suggested I try squatting last for quads rather than first. So this is what I would do for my quads:

Leg Extensions	4 x 12-15
Leg Press	4 x 10-12
Squats	8-10

Doing squats last took about 100 pounds off what I could use, but it certainly prevented me from having terrible back pain the rest of my life. You have to put your ego aside and think about

the safest and most productive ways to train, not simply focusing on how much weight you use.

CAUTION: ISOLATION MOVEMENTS ARE NOT MEANT TO BE TRAINED HEAVY!

I need to point out that though it might be tempting to go as heavy as possible on your isolation movements that precede the compound lifts when using pre-exhaust, it would be a very bad idea. Single-joint movements like leg extensions and dumbbell flies aren't meant to be trained extremely heavy. Trying to do so will wreck your joints. Instead, choose weights you can do at least 12 reps with in a nice rhythmic tempo, keeping constant tension on the muscle. These should not be maximum efforts.

PRE-EXHAUST: A TECHNIQUE THAT BELONGS IN YOUR ARSENAL!

You can use pre-exhaust when you're injured, to make lighter weights feel heavier while still allowing healing to take place. You can also incorporate it as I did, as a way to make sure your joints were not being beaten up to the point where you had pain or even injuries. If you want a physique that stands out above the rest, you need good training principles and good nutrition. Pre-exhaust is a technique that will help you achieve your physique goals safely and effectively. ■

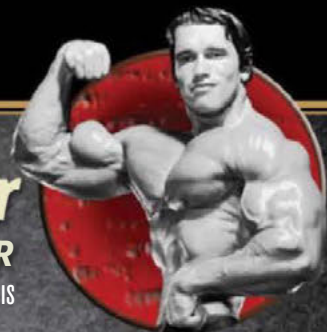
The first annual Lee Haney Physique and Fitness Games will take place in Atlanta on October 31. The NPC competition will be the last qualifier for the NPC Nationals in the region. For more information, please visit www.LeeHaney.com.

Would you like to train with eight-time Mr. Olympia Lee Haney? Lee offers both online and personal training for out of town guests. Visit www.leehaney.com for a complete list of services!

Arnold's Corner

WITH 7-TIME MR. OLYMPIA ARNOLD SCHWARZENEGGER

BY RON HARRIS



ARNOLD SPEAKS

Luckily for us Arnold fans, the fact that he launched his own supplement line last year also means that he is heavily promoting it online via a series of videos featuring new interviews along with footage from "Pumping Iron," both used and unused. In the video "Arnold Schwarzenegger Motivation – 5 Rules of Success" on the YouTube channel Arnold Schwarzenegger Series, the Austrian Oak holds court on several subjects. The first may sound overly familiar, but that's only because it's by far the most critical component in achieving anything: visualization and belief.

MIND OVER BODY

"The body is important, but the mind is more important than the body. You have to visualize what your body ought to look like in order to make it win, because that's what then creates the will. The will that makes you go into the gym every day, the will that makes you go and do the forced reps, that makes you go beyond. When you do the 500-pound reps in squats, and you can't do another rep and your body is shaking, it's the will that makes you go down one more time and struggle up. It's all of this—the mental aspect—that motivates you and makes the difference between being in the gym full of joy and looking forward to doing that extra rep, and looking forward to doing those extra 100 reps in the sit-ups and working past the pain barrier—all that is the mind. It's not the body. That's why I think the body is very important, but the mind is more important than the body.

"So you gotta go to the gym and feel like every rep that you do is getting you one step closer to that goal, to make that vision that you have turn into reality. And that's why when you look at 'Pumping Iron,' you can see that we always had great joy in the gymnasium. People were always saying, 'Why would you laugh and have a good time? You're working out for five hours.' We did because I knew that every workout, every five hours, would get me closer to winning Mr. Olympia, Mr. Universe, Mr. World and all these things."

DON'T BE AFRAID TO FAIL

Next up, Arnold tells us that not only is it vital that we aren't afraid to fail, but in fact we must embrace failures as a necessary step toward success. Just to make sure we meatheads get it, he uses a lifting analogy!

"If you think that along the way, you're not gonna fail, then you're blind. Because there's no one that I've ever met, no matter how successful they are, that hasn't said they've had their failures along the way. You have to. The only way you can really know that you can lift 500 pounds is if you're willing to fail. So if you're afraid of fail-

ure, then you'll never grow. The people that grow the furthest are the people that really don't care if they fail or they make it. They're gonna take that risk, because that's what you have to do."

1980 MR. OLYMPIA CONTEST

A final interesting tidbit in this video is Arnold's brief commentary on his decision to enter the 1980 Mr. Olympia contest, though he doesn't quite explain his personal motivations for doing so.

"I retired from bodybuilding in 1975, and I signed [for] a series of Conan movies. Here I was, a big studio behind you, budget of \$20 million, which of course in these days is equivalent to \$100 or \$150 million, and I was going to Australia to be a judge at the Mr. Olympia competition. But then all of a sudden I thought, I should compete. I think the competitors felt disappointed. They felt kind of like ... *Why would I do that? Why would I take that trophy away from them when I have everything else on the plate?* And so I think there was disappointment there. You know, I just felt that's something I needed to do. I felt very strongly about it, and so I competed."

Those close to Arnold have offered up their theories as to why he chose to come out of retirement for one last hurrah. By 1980, Frank Zane was the reigning three-time Mr. Olympia—and his heir apparent in the minds of many seemed to be young upstart Mike Mentzer, who also disparaged the high-volume, high-frequency training style of Arnold and his peers in favor of brief, high-intensity workouts. In the minds of some, Arnold was obsolete. Coming back and winning a seventh title would not only reassert his relevance, but would also show he was still the best bodybuilder in the world in spite of newer trends in physiques (as in the more streamlined, ultra-shredded Zane) and training theory. Arnold's win in Sydney went down in bodybuilding lore as one of the most controversial in history, but it definitely proved that once Schwarzenegger put his powerful mind and will toward a goal, it was a foregone conclusion he could prevail. ■

"The mind is more important than the body. You have to visualize what your body ought to look like in order to make it win, because that's what then creates the will."

The Blade

WITH 2008 MR. OLYMPIA DEXTER JACKSON



THE GREATEST WORKOUTS OF MY LIFE

You have said that you are getting close to retiring, but as long as you are still able to improve and place very well, you are sticking around. How is it possible for a man who has been competing for over 25 years to make improvements? Were there things you weren't doing optimally with your training or your nutrition for many years, and only now you are firing on all cylinders?

Yes, neither my training nor my nutrition was as good as they should have been for most of my career. In my younger years, I was blessed with the type of metabolism that could get away with eating just two meals and two shakes a day, with a lot of the "wrong" foods in my diet, and I still continued to stay lean and gain more quality muscle. I could stay big and full eating only 200 grams of carbs a day. That changed over time. George

Farah was the one who got me eating a lot cleaner, and a lot more food, as in four meals a day and two shakes, with 100 grams of carbs at each of those solid meals. Doing that helped me add more lean mass and stay fuller. And I can't credit Charles Glass enough for what he's helped me accomplish, thanks to having him push me in the gym. I can honestly say these past few years with him have been the best workouts of my life. He's a legend, one of the greatest trainers our sport has ever seen. Just being around him and having him train you is incredibly inspiring. It makes you want to give 110 percent. On my own, I might stop short when I still have another rep in me or another set of an exercise. Charles knows exactly what I can do if he pushes me, so I get those reps and sets when I train with him. Put all that together and you can see how I am still getting better, even though I will be 46 years old this fall.



"He's a legend, one of the greatest trainers our sport has ever seen. Just being around him and having him train you is incredibly inspiring. It makes you want to give 110 percent."

KNEE WRAPS FOR MORE GAIN AND LESS PAIN

In your interview with Peter McGough, you said that you only started using knee wraps near the start of your prep for the Arnold Classic. Had you never used them before? And how do you incorporate them into your leg workouts? Do you only use them for certain exercises, and then only for the heaviest sets?

That wasn't actually accurate. I did get more consistent with using the wraps at 14 weeks out from the Arnold, but I have been using them on a pretty regular basis since I started going out to LA to train with Charles Charles. It was his suggestion. I had tried knee wraps a few times over the years, but I never liked them. They were uncomfortable and would cut off the blood supply to my lower legs within a couple of minutes. It turned out that I had been wrapping them way too tight! Once I changed that, I found they gave me just enough support to go heavy without experiencing any knee pain. Now I use them for all my work sets on squats (if I do them, which is rarely these days), machine squats, hack squats and leg presses. I don't bother wrapping for the warm-ups or for lighter movements like leg extensions and lunges. ■

DAYS OF HEAVY JUNK FOOD ARE OVER

You were notorious in years past for being able to eat more than your fair share of junk food and fast food in the off-season, while remaining lean. Over the last couple of years, you have shifted to eating clean year-round. Is this a challenge for you? Do you still get cravings? Or after having eaten clean for so long now, are you used to it?

Let me clear that up, because a lot of people took what I said to mean that I eat 100 percent clean year-round. I don't. In the off-season, I will eat clean all day, and I eat whatever I want for dinner. That can be spaghetti and meatballs, a cheeseburger, pork chops with gravy, macaroni and cheese, etc. Even right after a contest, I don't binge like I used to back in the day. My stomach can't handle that anymore. I might have a couple of slices of pizza now instead of a whole pizza, or a few cookies instead of a dozen cookies and a pint of ice cream. I don't crave junk the way I used to, for the simple fact that my stomach just doesn't seem to tolerate it very well anymore.

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For information about Dexter's NPC shows for 2015, visit www.dexterjacksonclassic.com (Dexter Jackson Classic) and www.djmephiphiclassic.com (Dexter Jackson Memphis Classic).

Got a question for Dexter Jackson? You can ask him directly on the MD website and have Dexter personally answer your question! Go to www.musculardevelopment.com, MD Forums, MD Staff and Pros, Q and A for Dexter Jackson.

Hardcore Q&A

WITH 8-TIME MR. OLYMPIA RONNIE COLEMAN



BETTER PROS IN THE '90S

I was glancing through old contest reports, and I found this one of the 1991 NPC Nationals. This was the top eight in the heavyweight class, the show you did right before turning pro at the IFBB Worlds in Poland:

1. Kevin Levrone
2. Flex Wheeler
3. Paul DeMayo
4. Ronnie Coleman
5. Matt Mendenhall
6. Bob Cicherillo
7. Chris Cormier
8. Edgar Fletcher

Wow! Just between you, Kevin, Flex and Cormier, you had your eight Mr. O titles, and there were about 75 pro wins among the four of you. People talk about how much better the depth at the national level was then, and current fans try to argue against it. What do you think? Did the USA and Nationals back in the old days produce a lot more top pros than what we see today?

Of course! It was so much harder to get a pro card back then compared to today, and a lot of the younger guys now don't realize that. Only the overall winner at the USA and the North Americans turned pro, and you had guys from Canada and Mexico in that show too. Only the class winners at the Nationals turned pro— now it's the top two in every class, plus there are two more weight classes than there used to be, welterweight and super heavyweight. That's right, until the late '90s, every guy over 198½ pounds was in the same class. That meant for a while, you had a lot of big guys who were all good enough to be pros, but only one at a time could turn pro. Even a few guys who became some of the very best pros, like Flex and Chris Cormier, took a few years to turn pro. There were

some guys like Edgar Fletcher and Matt Mendenhall who never got their card. I competed with Edgar at the 1990 Nationals when he got second, and he looked awesome. I thought he should have won. For sure I thought he would be a pro, but nope. It was that way with quite a few guys. Nowadays, I don't see too many impressive new pros at all— forget about amateurs.

PERFECT FORM NOT FOR EVERYONE

I don't know if you ever read the comments under YouTube videos, but you and a lot of other pros get blasted for your exercise form all the time. The critics insist your form is all wrong, that you throw the weights around and don't keep the muscle under tension the way you would if you did your reps much more slowly, and squeezed the muscle at the end of each rep. Meanwhile, guys like you and Branch are among the most thickly muscled men to ever walk the earth— while I would guess most of these critics aren't particularly massive individuals. What's the deal? Is so-called "perfect form" overrated in terms of how effective it actually is for building muscle? Was there a time when you used stricter form?

No, I never did try training any other way, like doing my reps slow. If my form was so bad and I won eight Mr. Olympia titles, maybe everybody should train like me! I'm not saying it's the best way for everybody, but it was the best way for me. I don't think I could have been or would have been any bigger training with that "perfect" type of form. I competed at almost 300 pounds! Using a ballistic rep speed allowed me to go way heavier. People have told me, well, you weren't really feeling the muscle work. How would they know what I was feeling when I trained? I had a great connection with my muscles and I always got great pumps.

And you know what? I think a lot of these guys who only train with slow reps and pause to flex the muscle on every rep are missing out. They should give my style a try too, just to see what happens. I don't like to knock anyone, but a lot of times when I see these guys posting videos where they do all the reps slow and controlled, they don't have a whole lot of size. I bet if they mixed in some looser form with heavier weights at least part of the time, they would grow. You never know until you try.

The bottom line, as always, is ... if it ain't broke, don't fix it. I kept growing the way I trained, and so did Branch. If you aren't growing and haven't in a while, you need to switch things up and try something else, even if you have this idea that it's "the wrong way." There is no "wrong" when it comes to results. If something works for you, it's right! ■



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The Gifted One

BY RON HARRIS

WITH 4-TIME MR.
OLYMPIA PHIL HEATH



WHO ARE WE TO TELL PHIL HEATH

HE CAN'T WIN 10 MR. OLYMPIA TITLES?



When Phil Heath let it be known that his ultimate goal is to retire with 10 Mr. Olympia titles, which would be two more than either Lee Haney or Ronnie Coleman won, there was widespread outrage at his perceived arrogance. Does he really think he's better than both of those two living legends? Shortly after winning his fourth Sandow, Heath explained his goal in such a way that should make anyone who felt that way take a good, hard look at themselves and why they don't want to see others succeed.

"I want to win 10 of these damn things," Heath declared. "And a lot of people are like ... man, that's messed up, he's cocky, this and that. Kind of like when LeBron [James] said he didn't want to win one, two or three [NBA Championships], he caught a lot of flak for that. I don't understand you catching flak for something that's your personal goal. That'd be like someone telling me, Phil, I'm trying to gain 30 pounds of muscle, and I just start laughing at them. Like ... man, you ain't gonna get that. You're crazy. Why? That's your goal. So for me, I remember saying ... man, screw it. I live one time. I should be able to say yes, I want to win every year. I definitely don't put this much effort into myself to lose.

"And I'm here to tell everybody that it would be no different from a child growing up and somebody asking, Hey, what do you want to be when you grow up? The kid says I want to be a doctor or a lawyer, this or that. Or what if the kid says, I want to be the best speller in the world? Obviously, he has to be the best speller in his class, his grade, in his school, city, state and so on. You've got to applaud that, like that's a good job, [that] a kid wants to be something like that. But when you say, Yeah, I want to be the CEO of a company one day, or I want to be the best bodybuilder in the world, or I want to be a 10-time Mr. Olympia, it's kind of like ... *really?* (Rolls his eyes). And it makes that person feel like, well ... if I express what I want, I'm not being humble. And I don't think that people really understand what the definition of humility is."

Let that sink in a moment, if you would. Why are we quick to encourage young people to go after their dreams and goals, yet quicker to condemn adults who do the same? Are we that threatened by their ambition and will to succeed?

"So when I talk about wanting to be successful, great," Heath continued. "Like if you tell me you want to be Mr. Olympia, I'd be like ... great, cool, why not? I don't see why you would want to walk on earth being on a hamster wheel. No forward progress. And hiding the fact that you want to be successful is kind like when we were in school, and we all knew someone who was really smart and didn't want to be smart, because they wanted to fit in. Hopefully, that person didn't

believe the morons that kept telling him, Oh, you're a brainiac! That's actually a compliment! Oh, you're good at something? Man, that's a compliment. Go with that. See how far it can take you. If I had listened to people saying certain things, I never would have become a bodybuilder. I never would have tried to earn a pro card, and I definitely wouldn't be Mr. Olympia four times if I'd listened to that negativity, and allowed their myths to become my reality. If you want something bad enough, go after it. Don't be afraid of it."

There you have it. Phil Heath has a goal of setting the all-time record of 10 Mr. Olympia titles, which would require another six victories. Prior to listening to him explain himself in this intimate seminar, I was guilty of considering Heath to be more than a bit pretentious to think he is capable of making history in such grand fashion. Now I have to admit that I was being nothing more than a hater, and it was only my own insecurities and dissatisfaction at my own relative lack of ambition that made me feel that way. What about you, fellow bodybuilding fans? Does it bother you that Phil Heath has such lofty aspirations? It shouldn't. As he mentioned, we only have this one life to live. Most never pursue their dreams, out of fear of failure or just plain laziness. Phil Heath is capable of possibly securing his place as the greatest bodybuilder who ever lived. Instead of jeering at that, we should all admire and respect that fact that he is putting his heart and soul into attaining a nearly impossible goal. ■

Source: "Mr. Olympia Phil Heath Seminar, Part 2" video filmed on October 23, 2014 at Bev Francis Powerhouse Gym in Syosset, New York. As seen on the NPC-NewsOnline YouTube channel.

**"If you want something bad enough,
go after it. Don't be afraid of it."**

Blood & Guts

WITH 6-TIME MR. OLYMPIA DORIAN YATES



WHEN PRO BODYBUILDING REACHED ITS PEAK

It's nearly 20 years since you retired. Theoretically, there have been advances in training, nutrition and drugs in that time. You would also assume the gene pool for bodybuilding is larger with more participants. Yet we have not seen the same progression in physiques from 1995 to 2015 that we did from say, 1975 to 1995. Many have argued that there have been no real advances in the quality of physiques, with a smaller contingent feeling that there has been a regression. Though you have admitted you don't keep up with all the modern trends, can you speculate as to why we have not seen better physiques recently than those of yourself, Kevin, Shawn, etc., from the '90s?

Let's look at these supposed advances first. Advances in training? No, I can't say I have seen any significant progress. What was effective then, still is today. Perhaps we have seen some advances in nutrition and supplementation. As for the gene pool, there certainly

"You had men like Lee Haney, Flex Wheeler, Shawn Ray, Kevin Levrone, Ronnie, Nasser, Vince Taylor and many more of similar caliber. As far as I am concerned, that was when pro bodybuilding reached 'critical mass.' If anything, it's gone backward since then."

are more people into weights and fitness now, but there are also far more options for them. Many of them now choose to train for the Men's Physique look and compete in that division. You also have sports now that didn't exist 20 years ago, such as MMA and CrossFit, and certainly more than a few guys with good genetics have gone those routes.

I think we saw the peak of competitive bodybuilding in the 1980s and 1990s, in terms of both interest level/participation and the physiques. Aside from myself, you had men like Lee Haney, Flex Wheeler, Shawn Ray, Kevin Levrone, Ronnie, Nasser, Vince Taylor and many more of similar caliber. As far as I am concerned, that was when pro bodybuilding reached "critical mass." If anything, it's gone backward since then. One major reason is that the men of that era were willing to work hard, while today's bodybuilders seem to want to take an easier path. We still see some great champions today like Phil Heath and Dexter Jackson, but the depth of the quality in physiques we see onstage now just isn't what it used to be.



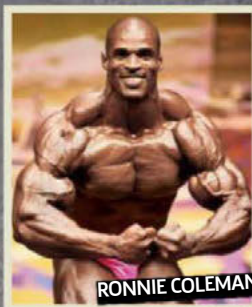
FLEX WHEELER



SHAWN RAY



KEVIN LEVRONE



RONNIE COLEMAN



NASSER EL SONBATY

COMPOUND VS. ISOLATION MOVEMENTS

I have always heard that there are some exercises for building muscle, and others that are purely for shaping. For instance, bench presses build the pecs and squats build the quads, while cable crossovers and leg extensions are shaping movements for those muscles. But since you can't change the shape of a muscle, this doesn't seem to make sense once you think about it. What do you say about this delineation of exercises for building versus shaping?

It is true that you can't change the shape of a muscle. But you can certainly influence the look of a muscle by emphasizing certain aspects of it, such as focusing on inclines for the upper chest, just as one example. It's not accurate to divide exercises into those that build mass, and others that shape a muscle. A more logical way to break it down would be multi-joint or compound movements, and single-joint or isolation movements.

As the name implies, compound movements involve several muscle groups acting together. The bench press involves the pectorals, the anterior deltoids and the triceps. A barbell row involves the latissimus dorsi along with the biceps and posterior deltoids, with contribution from other back muscles such as the

trapezius and rhomboids. Compound movements tend to provide the most tension in the mid-range of the movement.

Isolation movements such as the leg extension or lateral raise focus on a specific area such as the quadriceps or medial deltoids, and provide more resistance in the stretch and contracted segments of the range of motion. But all exercises stimulate growth and lead to increased muscle mass. Compound movements, by their very nature, result in greater mass gains simply because they involve more muscles and allow for heavier resistance. That's why you might be able to press 150-pound dumbbells, but you certainly wouldn't be able to use 150s for flies.

As a final note, some exercises have been labeled as "cutting" movements. This is impossible, as definition is merely a factor of how much or how little body fat one has over the muscles. ■

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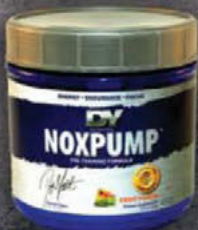
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BUILD YOUR FOREARMS AND ARM MASS WITH ZOTTMAN CURLS

Although machines have their purpose, and are convenient for many body parts, one has to recognize that there is a downside to exclusively using machines. One downside is that the forearms tend to get underworked. That is because instead of needing to load plates to a barbell, which activates forearm and arm muscles, machines only require you to move a pin to adjust the resistance. A great way to compensate for the lack of activation of the forearms, while simultaneously improving arm and forearm mass, is to step back in history to take on a specialized dumbbell curl called the Zottman curl. This exercise was developed by Philadelphia strongman George Zottman, who set many lifting records in the mid-to-late 1800s, and developed outstanding arm and forearm strength. His strength was built on the back of his Zottman curls, as they provided an excellent activation of biceps, and both extensor and flexor muscles of the forearm.

MUSCLES ACTIVATED

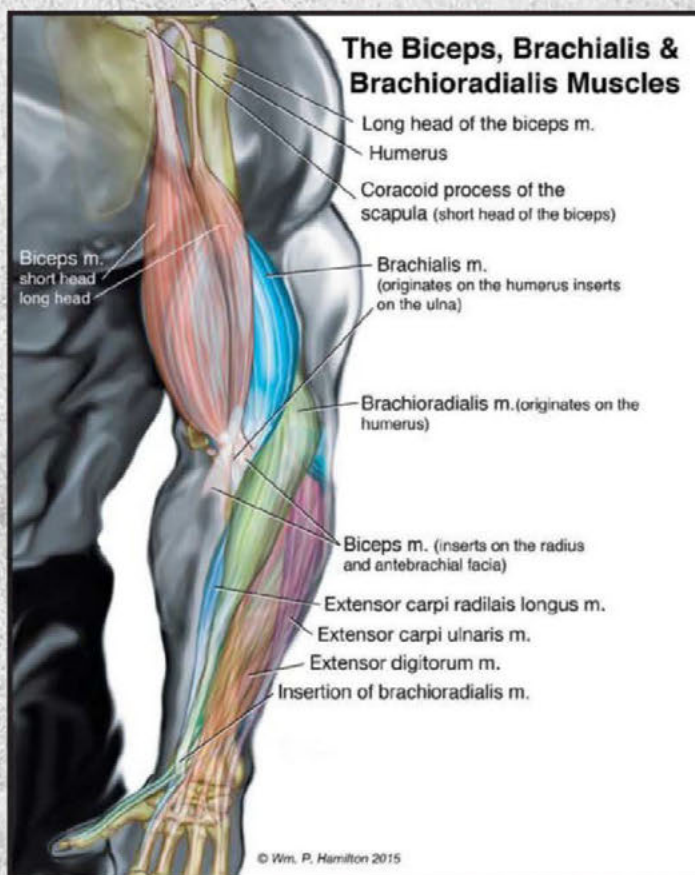
The Zottman curl is an unusual exercise that incorporates all of the elements needed to activate the forearm and upper arm musculature. The initial phase of the exercise activates the long and short heads of the biceps

brachii muscle. This two-headed muscle runs down the anterior side of the humerus bone of the upper arm, attaching to the bicipital tendon and anchoring on the radius bone of the forearm near the elbow joint.¹ Contraction of the biceps muscle flexes the elbow, and can also pivot the radius bone at the elbow joint to supinate the hand² (turns the palm of the hand toward the ceiling).

The brachialis muscle is also strongly activated on the lift upward. It begins on the humerus bone, and crosses the elbow joint anteriorly to attach to the ulna bone near the elbow joint. It can generate as much as 70 percent of the total arm flexion force.³

The brachioradialis muscle assists the biceps and brachialis in elbow flexion, and works especially hard when flexing the elbow with the hand pronated in the lowering phase of Zottman curls.⁴ The brachioradialis muscle begins at the humerus bone just above the lateral epicondyle of the elbow (a "bump" on the outside of the humerus bone just above the elbow joint).¹ It attaches distally by a long tendon along the lateral side of the radius bone near the wrist. This forearm muscle assists the biceps and brachialis in elbow flexion.

The extensor muscles of the forearm are particularly

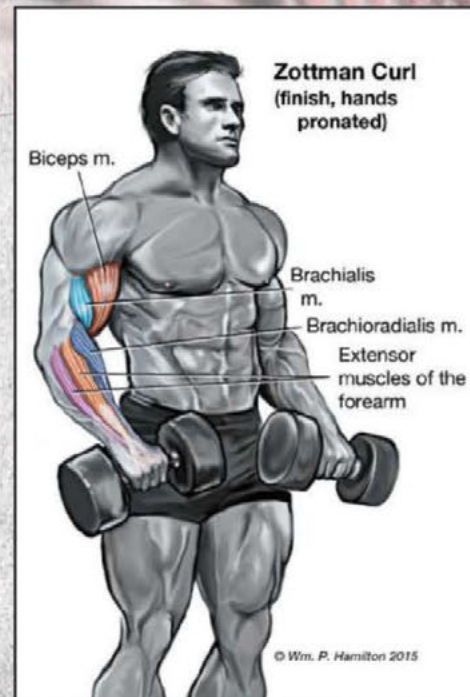
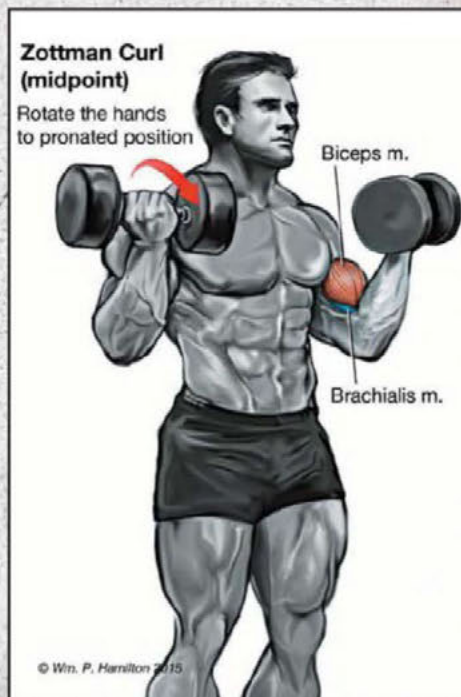
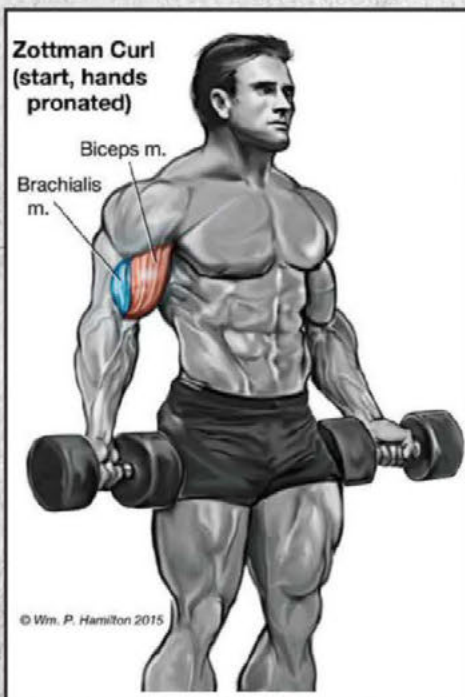


active on the downward part of the Zottman curl. They begin above the lateral epicondyle of the humerus, but below the attachment of the brachioradialis.¹ The extensor muscles attach distally to the back of the base of the metacarpal bones of the hand.

The forearm flexor muscles (flexor carpi radialis longus and flexor carpi ulnaris muscles) flex the wrist joint, and they are generally active to grip the bar strongly during the Zottman curls. These forearm flexors have thick muscle bellies that run from the medial epicondyle of the humerus at the elbow, to the bones on the hand and wrist.¹

ZOTTMAN CURLS

- 1 Stand and take a medium-weight dumbbell in each hand, with a supinated grip (palms facing forward) as you would to begin a routine dumbbell curl.
- 2 Flex your elbows and curl the dumbbells upward toward your shoulders in a controlled fashion. Continue upward until you are unable to move the weights any higher.
- 3 After reaching the top, pronate your hands so that your palms face the floor.
- 4 Slowly lower the weight back to the starting position. Take a full three seconds to lower the weight. This phase is similar to a reverse curl.
- 5 After reaching the bottom, reverse your hand position by moving your hands from a pronated to a supinated position. This will tighten the biceps brachii muscles, to increase their loading on the upward lift. Begin the next repetition upward and repeat the cycle for eight to 10 repetitions before resting, alternating between supinated and pronated hand positions.



Once you are nearing the state of fatigue and the arm/forearm burn is getting intense, you can briefly put the dumbbell down (i.e., for two or three seconds) and shake or swing your arms, hands and wrists to increase the blood flow to your oxygen-deprived muscles. However, this is not intended to be a long rest. Quickly pick up the dumbbells and continue your set for two more repetitions. This will push your set well beyond the initial failure point. Controlling the descent of the dumbbells with the hands pronated is quite important, as sudden or uncontrolled jerky descents could result in tendonitis, sore elbows and increased muscle soreness.⁵

Alternating between pronation and supination of the hands will activate all of the muscles in the forearm and upper arm, and together this guarantees that your arm and forearm mass will begin to explode in an attempt to adapt to these new ranges of motion. Supinating your hands will increase the effort of the biceps brachii. Pronating your

hands reduces the ability of the biceps, and places the greater emphasis on the brachialis and brachioradialis, as well as the extensor muscles of the forearm.^{4,6}

You will likely find that your forearms and arms begin to burn with a fire that is first deep in the biceps, which then spreads under your biceps where the brachialis muscle lives, and travels down your forearms to your hands. This discomfort will increase as the blood-starved fibers continue to contract deep into your set as the muscles fatigue.⁷

Zottman curls are not easy or pain free, but they are going to activate the deepest of your muscle fibers in a pattern that they have not experienced previously—and this will necessitate new growth and strength. Although no one would want to return to all of the old training methods and dungeons that the lifters of the past had to endure, this “back to basics” type of exercise from another era can certainly transform your arms beyond 21st century expectations. ■

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IS THE FDA 'KIND' TO YOUR HEALTH?

I SAW THE FDA'S WARNING LETTER SAYING KIND BARS AREN'T HEALTHY FOR YOU. IS IT LEGIT?

KIND bars are now in 150,000 U.S. retail stores, and many active Americans are snatching and gobbling them up instead of chocolate bars or candy. According to Joe Cohen, senior vice president of communications at KIND, the company sold 455 million units (bars and granola-based snacks) in 2014. The bars are a mix of mostly nuts and dried fruit, and they even say "healthy" in small print right there on the label.

But that label claim is one of the things that got KIND, LLC in trouble with the U.S. Food and Drug Administration (FDA). The agency cited KIND for a number of misbranding violations tied to four varieties of its popular bars. One of the "significant violations" alleged was KIND's misuse of the word "healthy." Under FDA regulations, "healthy" is a nutrient content claim that only applies to foods with, among other things, only one gram of saturated fat per serving and 15 percent or less of calories from saturated fat. Four of KIND's bars exceeded the "healthy" level of saturated fat set forth in the regulations. Because the products aren't "healthy" under the FDA's definition of the word, calling them "healthy" makes the products misbranded—and therefore illegal under federal law.

But does the 2.5 grams to 5 grams of saturated fat in the four products truly make them unhealthy? Well, let's look at that. The fat in the KIND bars in question comes from nuts and coconut, and that

includes the saturated fat. Years ago, many nutrition experts believed that all fat was bad, and saturated fat was downright terrible. These beliefs led to the "low-fat" craze of the 1980s, when many Americans would grab boxes of low-fat cookies and cakes, regardless of the calories or sugar content. But, curiously, rather than slimming down, these Americans fattened up. During America's low-fat days, overweight and obesity statistics rocketed out of control.

"We are awash with solid science that dietary fat does not have to be unhealthy and in fact, can be quite health promoting," Doug Kalman, Ph.D., RD, FACN, a nutrition author, researcher and expert and the co-founder of the International Society of Sports Nutrition, points out. "Nuts are rich in unsaturated fatty acids and most contain substantial amounts of monounsaturated fatty acid, two heart- and body-friendly types of fat. Almonds, along with Brazil nuts, walnuts and others, have been shown to lower heart disease risk. How can that be unhealthy?"

He's right. And by the FDA's standards, foods that are generally thought to be good for you like avocados, eggs and wild salmon aren't "healthy."

Like Dr. Kalman, most nutrition experts now extol the virtues of healthy fats as part of an overall balanced—and decidedly not low-fat—diet. Unfortunately, the FDA hasn't caught up to the science. It remains decades behind. By the FDA's



archaic definition, a bag of raw almonds isn't "healthy" for you. Still, food and dietary supplement marketers alike are required to follow these regulations, no matter how outdated or inappropriately applied.

Remember how awesome your uncle thought he looked in that powder blue leisure suit in 1987? Now it's cringe-worthy, and photos of it are hidden in a box in the back of his closet. But the FDA's definition of "healthy" wasn't some embarrassing, half-forgotten fossil unearthed by critics to humiliate them. It was the agency itself that recently investigated KIND's products and publicly applied the regulation, lobbing a grenade at the company's image for all the world to see.

My point has less to do with KIND bars per se than with the stunning disconnect between government agencies like the FDA and the current state of science. I'm sure many folks within the FDA mean well. But government bureaucracies seem to lumber along with little ability or interest in keeping up with the research. A few issues back, I wrote about another government agency, the United States Department of Agriculture (USDA), which once foisted upon us the ridiculous "Food Pyramid" that advised eating six to 11 daily servings of bread, cereal, rice and pasta—more than the suggested amounts of fruits and vegetables combined—and recommended eating fats and oils only sparingly. If the government's bias toward high carbs and low fat reflects a "flat Earth" understanding of what's actually "healthy," how reliable are its other views and definitions in the area of nutrition ... or maybe on other subjects as well? ■

Rick Collins, JD, CSCS (www.rickcollins.com) is the lawyer that members of the bodybuilding community and nutritional supplement industry turn to when they need legal help or representation. [© Rick Collins, 2015. All rights reserved. For informational purposes only, not to be construed as legal or medical advice.]

If the government's bias toward high carbs and low fat reflects a "flat Earth" understanding of what's actually "healthy," how reliable are its other views and definitions in the area of nutrition ... or maybe on other subjects as well?

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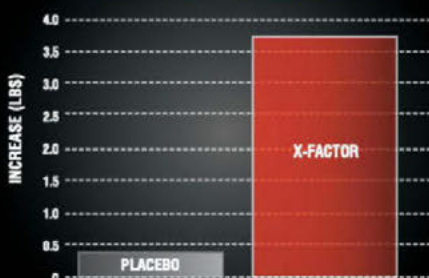
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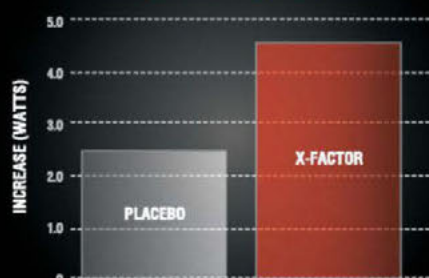
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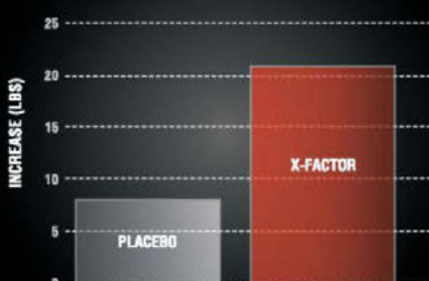
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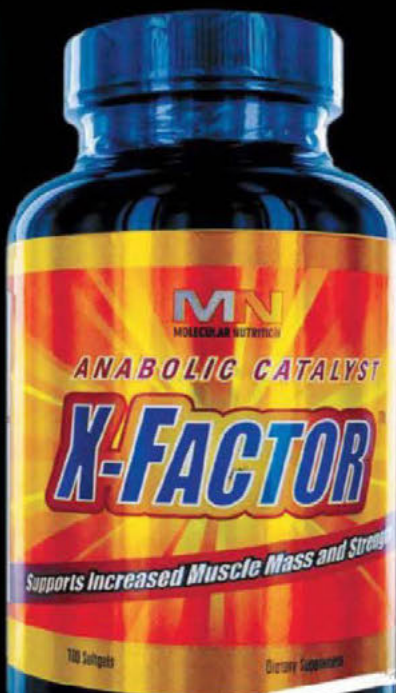
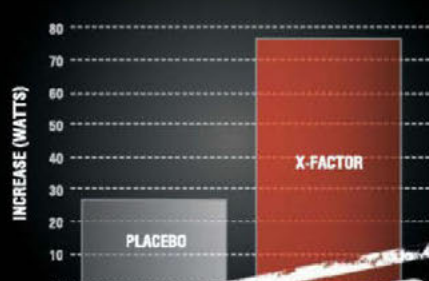
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BEST REP RANGE FOR BIG ARMS

My arms really need to grow. I have read that the best rep range is to go heavy for six to eight reps, but other gurus recommend higher reps as in 15-20. Some say straight sets are best, while others advise drop sets and supersets. What do you think I should do?

In my experience, straight sets of six to 10 reps seems to deliver the best results for arm growth. Fewer than that, and there's not enough time under tension and you're working on strength more. Once you get up into the 12-15 rep range or higher, you're really just working on muscle endurance. Arms need to be trained heavy and with good form. I also find that on barbell curls, triceps extensions and pushdown movements, a lot of guys go too narrow with their grip. You can do that at times, but you also need to take a wider grip to hit the belly of the muscle. For instance, a narrow grip on curls will work your outer biceps (the long head) and the brachialis, but it doesn't do a whole lot for the inner biceps, or short head.



MY DEEP PASSION FOR TRAINING

Charles, given your reputation and the demand for your training services, have you ever thought about starting your own personal training certification, the way Lee Haney and some others have? Or do you think it's just not possible to teach others to do what you do, the unique way that you do it?

I looked into it a bit, and getting accredited is something I don't have time for at the moment. But far beyond that, my knowledge and experi-

ence aren't the real reasons I am as successful as I am. I have a deep passion for training and for helping others reach their full potential. Few trainers or would-be trainers seem to have that same level of passion. Most get into it for the money. Don't get me wrong now, I like making money too. But I don't do this for the money. I do it because I love it. That's why I am able to come up with all the variations that I do and why I have such attention to detail. That's very hard to teach someone else.

STRONGEST BODYBUILDERS I'VE WORKED WITH

I know that strength isn't super important for bodybuilders, but just out of curiosity, who were some of the strongest bodybuilders you ever trained? Can you recall any of their most impressive lifts?

Back in the early to mid-'90s, I used to train Flex Wheeler and Chris Cormier. The bench press was my specialty, so I liked sharing all my

tips with them to help them increase theirs. Both of those two were incredibly powerful on the bench. They would warm up with 315 and work up to 500 all the time. They could both handle 405 or even 455 for a few reps on the incline barbell, in the same workouts. Chris was also very strong on legs. He could do deep reps with 600 pounds on the squat, and he would go until his nose bled. When it came to leg presses or hacks, Cormier could load them up with all the

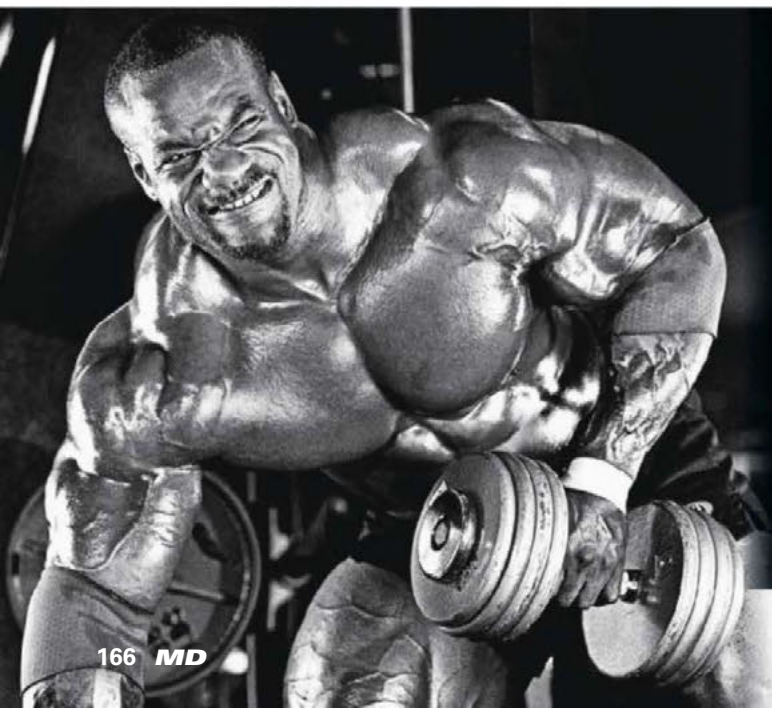
plates the machines held and knock out reps. I also used to train a couple of other guys who had some of the strongest legs for a bodybuilder I have ever known. One was Don Smith, who was better known for being a partner in Craze Wear clothing. The other was Dean Tornabene, who turned pro as a lightweight at 154 and usually weighed about 180-190 in the off-season. Both those guys could do good sets with 600 or more on the squat.

CHRIS CORMIER MAKING A COMEBACK

I saw on Facebook that Chris Cormier is making a comeback. You trained him years ago in his prime. Are you working with him again? I know he must be over 50 by now, and he's also had a history of severe back problems. How close do you think he can realistically get to the way he used to look when he was winning shows?

Chris is training himself for this comeback he is planning on. I certainly wish him the very best, but I also feel his time has passed. Chris had back problems and a spinal infection that led to nerve damage. His feet go numb at times and he can't control them. When you're going up against younger men in their primes and without the limitations of past injuries, it's rough. ■

Got a question for Charles? Email it to him at editor@musculardevelopment.com and you could see it answered right here in MD!





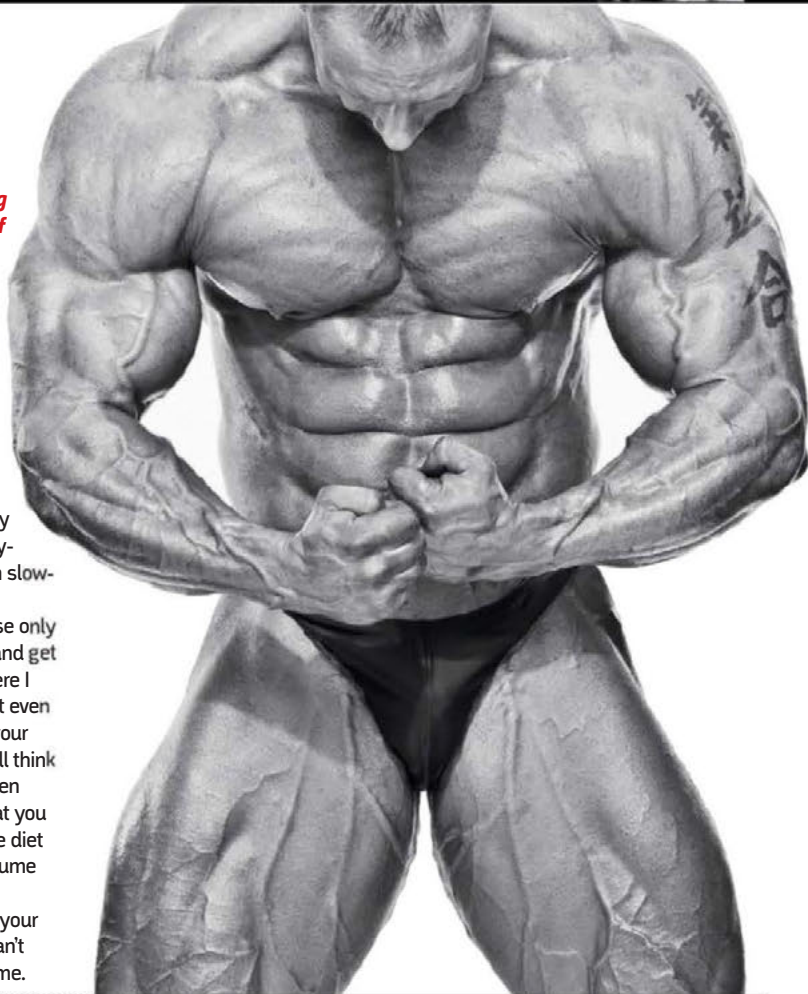
CARBS ARE REQUIRED FOR FAT LOSS

How come you don't give your clients lots of protein? I was looking at my friend's program, and you have her eating only three ounces of protein per meal. I am surprised, because I think I would starve on that program. I have six ounces of protein with each meal and I'm still hungry. Can you please be kind enough to explain? Because surprisingly, she won the show and I didn't!

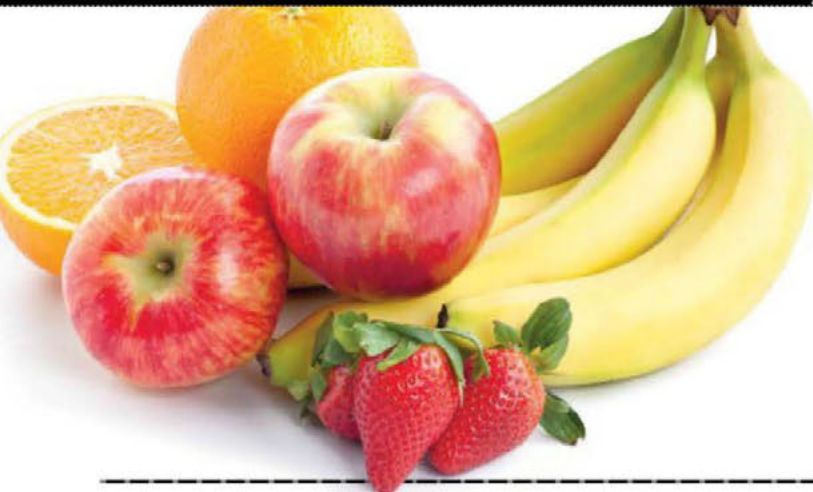
Do I really still have to explain it, even after your friend won? Just kidding. The reason I am not big on protein is because we really don't need much in order to stay in an anabolic state, as long as you know when and how to add the right amount of carbohydrates like I usually do. Lots of so-called experts out there would rather stay away from carbohydrates and instead give their clients crazy amounts of protein, thinking that rapid fat loss is a must. In reality, the best and fastest way to lose fat is by making sure that your meals have just enough carbohydrates to be able to support fat loss, by keeping your metabolism from slowing down while sparing the loss of muscle.

Many so-called experts will argue with the above, and tell you to use only protein. Their rationale is that protein will eventually turn to glycogen and get burned up, and the net result will be almost the same mechanism where I am telling you to use carbs. What these "experts" forget about, or don't even know most of the time, is that eating too much protein can be toxic to your body. Excess protein will cause you to hold water, and many people will think that the water is fat. As a result, some experts will lower your carbs even more—and worse, up your cardio to crazy amounts of sessions so that you barely have time to live a normal life. Bottom line? You guessed it—the diet will fail. Most people tell me how great they look a week after they resume their normal eating.

Please, ladies and gentlemen—be aware of who you are using for your nutrition and contest-prep. Sadly, there are too many prep guys who can't dial someone in to win a local show. Take care, and best of luck next time.



WHO SAID FRUIT IS BAD?



Guru, how bad is fruit for you? I hear so many different opinions, that I figured I would ask the man himself.

Fruit is bad? I don't know about that, or where you heard it! What you probably are asking is, how bad is fruit if you are prepping for a contest? Now, that would be a better question. I love fruit and include it in almost every client's program (as well as my own), except if my client has a sugar problem or diabetes—and even then, I will not cut out fruit entirely, but limit it to certain amounts.

Fruits are an amazing source of vitamins and minerals, and a great choice for any off-season program. Fruit can help anyone add fat-free muscle—of course, when it's used in good and sensible amounts, like everything else. I will add a piece of fruit to almost every meal in the off-season, but as we get closer to a show, I will start to eliminate most fruits due to their high sugar and calories. That's when I would rather use complex carbs for better control of insulin—not to mention, it's a much better choice to keep dieters fuller.

I hope this helps you make a better choice when to use fruits. Until next time, stay focused and always keep in mind that nothing is impossible as long as you are willing to give it your all.

George Farah is presenting his opinions and he does not, in any way, shape or form, encourage or condone the use of any illegal or controlled substances. Nothing contained herein is to be construed as medical advice. Use of any drugs and exercise regimen should only be done under the directions and auspices of a licensed physician. The writer does not claim to be a medical doctor nor does he purport to issue medical advice. Follow George Farah on Facebook at <https://www.facebook.com/georgefarahdietguru> or on Twitter @gvfarah. For more information, visit www.georgefarah.net.



MY RETURN TO THE MIDDLE EAST

There has always been some confusion about my heritage in the fitness industry. I have an Arabic first name, but I don't speak Arabic. I speak Farsi. That's because I am Persian. Both my parents are Persian, but I was actually born in Kuwait, where my father worked as a soccer coach for five years before coming to the USA. As you might know, Kuwait is bordered by both Iraq and Saudi Arabia. I was excited this spring to have the opportunity to return to Kuwait for the first time in 40 years.

The purpose of my visit was twofold: to meet with my distributor for Evogen Nutrition, Mohammed Bukhamsin and his family, owners of Health House Nutrition, and to speak at two sold-out seminars and make two packed store appearances. The seminars each ran for five hours, as I answered tons of questions about training (especially FST-7 training), nutrition and supplementation. Luckily I had a great translator, Aziz, who was able to take all my notes and translate them into Arabic accurately. Aziz is a trainer and a nutritionist, so he was able to grasp all the nuances of everything I wanted to convey. The interest level in Kuwait for bodybuilding now is through the roof among young men. Aside from going to the huge, beautiful malls full of high-end shops and driving their luxury cars,

there isn't a whole lot to do. That's why the gyms are flourishing and the sport of bodybuilding is taking off all over the Middle East.

I was able to visit both of the leading gym chains while I was in Kuwait City: Oxygen Gym and Platinum Gym. The biggest of the Oxygen locations is the flagship gym in Jabriya, where Big Ramy trains. I met with Bader Boodai, owner of Oxygen Gym, and also the owner of Platinum Gym. These facilities are massive and have every amenity you could imagine. Platinum Gym even has its own beach! The equipment is right up there with the two best bodybuilding gyms in the USA, Bev and Steve's Powerhouse and Gold's Venice. The only thing you won't find in the amazing Kuwait gyms are hot girls working out. These are for men only. That being said, there are quite a few standout physiques to be seen any time on the gym floors, and it's no surprise we are seeing more good competitors coming from this area.

Speaking of Big Ramy, we have been friends for a while. Normally, we see each other at the big contests and trade shows, where we are both so busy that we hardly have time to do more than say hi. This time, we actually got to hang out a bit. He was 10 days out from the Arnold Brazil and sitting at 325 pounds!



With Big Ramy at Oxygen Gym

Finally, I got to do a little sightseeing. I saw the hospital where I was born, and toured the old part of Kuwait City where my parents used to spend time in the mid-1970s. Locals talked to me about how different things were there before the war between Iraq and Kuwait. It was almost summer, and the daytime temperatures ranged around 105-108 degrees. That's comfortable compared to the 120-130 degrees it averages all summer. You can see why they enjoy their air-conditioned malls and gyms!

The Kuwaiti people were some of the warmest and most hospitable I've ever had the pleasure of meeting, and I have been all over the world. I can't wait for my next visit.

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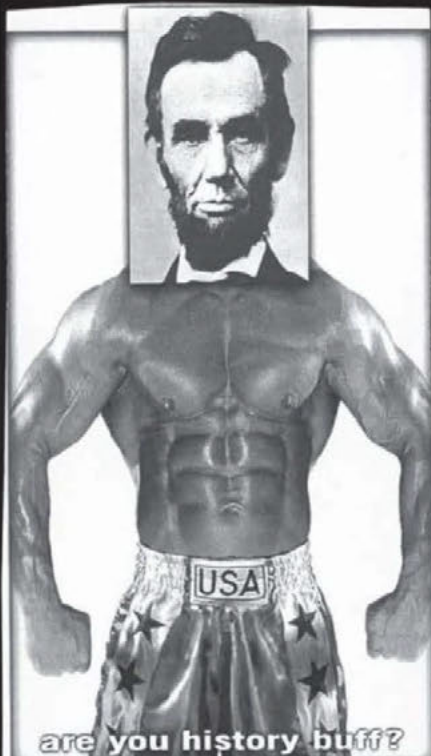
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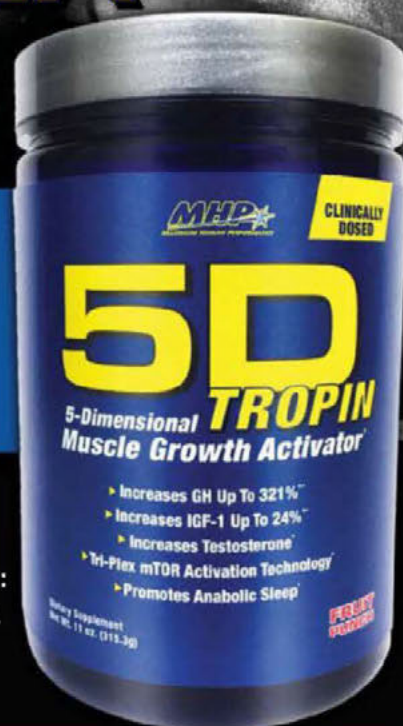
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